Page 6

ISSUE 14

90P

ATARI USERS MAGAZINE

LISTINGS

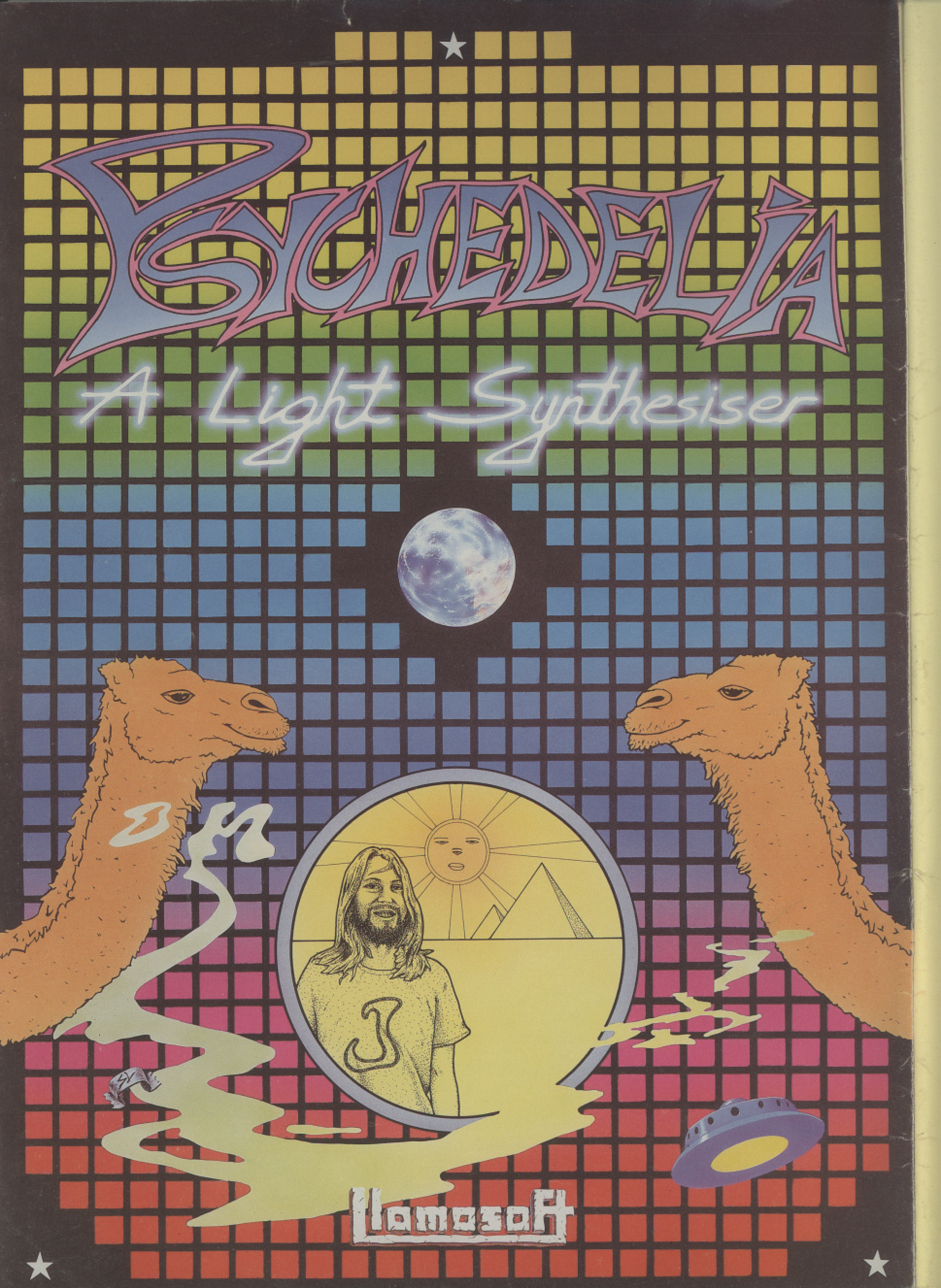
COUNTERACTION
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CROSSWORD CREATOR
DEPTH CHARGE

plus

TYPO II

ATARI ATARI ST ST XE XE

THE NEW MACHINES



Psychedelia
A Light Synthesiser
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Page 6

March/April 1985

Editor & Publisher
Les Ellingham

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Page 6 is a user's magazine and relies entirely on readers' support in submitting articles and programs. The aim is to explore Atari computing through the exchange of information and knowledge and whilst we cannot, unfortunately, pay for articles published we hope that you will gain satisfaction from seeing your work published and in turn we hope that you will learn from articles submitted by other readers. All published material is eligible for awards in the Annual Readers Poll and may receive additional Editorial awards as announced from time to time in the magazine.

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Copy date for the next issue is 18th March 1985

Editorial

COLOUR!

Welcome to an all-singing all-dancing real colour version of PAGE 6! To celebrate Atari's new machines we have thrown caution to the wind to produce an issue which may well become a collectors item! Treasure it. You may never see another like it! There again if Atari can produce and market the new machines as well as they can design them, who knows? We may finally see the British public, retailers and press take proper notice of Atari and you may at last be able to read about your Atari and buy software other than through PAGE 6. There are strong rumours at present that *THE ATARI USER* will be launched soon, possibly with Atari's backing, and that it will be available nationally through your newsagent. If it comes to pass, and I hope it does, then I wish it every success. Even though it may be competition for PAGE 6 I am sure that we will all benefit from the increased awareness it will bring. I am glad somebody is willing to take the gamble. 1985 looks like it may well turn out to be the most exciting year for Atari owners since that amazing Atari 400 burst on the scene a few years ago.

Thank you to everybody who returned the Readers Poll and Survey from the last issue and there were hundreds of you. The Survey confirms suspicions that very few Atari owners bother to read the U.K. computing press with only two magazines getting more than a 50% readership and of that the majority being occasional only. Computer & Video Games comes out as a clear favourite, despite dropping Atari listings in recent issues, with a 36% regular readership. The next most popular has only a 14% regular readership and from there on it is downhill all the way with between 50% and 90% of you who NEVER bother! It is no wonder that many people who have advertised software or products for the Atari over the past couple of years have sunk without trace or gone on to other pastures. There are (supposed to be) hundreds of thousands of Atari owners in the U.K. but the big problem has always been reaching them. Maybe the answer lies in the hands of Atari themselves who could take a leaf out of Acorn's tree. The BBC machine has an independent users magazine (not a patch on PAGE 6!) which BBC buyers have been made aware of through a card included with every machine. The result is a 20,000 circulation and the opportunity for many small companies to advertise at reasonable rates to a committed readership. If they can reach their customers, small companies grow into big companies and so a whole range of support for a machine grows up. Now with a 20,000 circulation you could have colour every issue!

We were fortunate recently to acquire a goodly supply of Atari games and applications packages and will therefore be giving these away over the coming year to contributors and in competitions. Look out for how you can increase your software collection in this and future issues.

Les Ellingham

News

Major news of course comes from Atari whose new products are detailed elsewhere in this issue. Meanwhile there are strong rumours that a number of 'bargain' packages will be available from Atari built around the 800XL. Unfortunately we were unable to secure any details at the time of going to press but if you are thinking of upgrading get in touch with your dealer. It may well be worth it.

English Software who have been very quiet since last summer are to release Colossus Chess 3.0 on 48k cassette or disk. It is the first chess program written in the U.K. for the Atari and has been programmed by Martin Bryant, one of Britain's foremost computer chess programmers. Also available will be Smash hits volumes 1 - 3 at £14.95 on cassette or £17.95 on disk. Each pack contains five titles and, even though Jet Boot Jack is included in each pack, they represent incredible value for money.

Revision C basic is now available in the U.K. Although released by Atari it is available only through Silicon Chip Ltd. 302, High Street, Slough, Berks or Software Express, 31, Stoneyhurst Road, Erdington, Birmingham, B24 8HA. Plug one in your 400/800 or XL and cure all known ills! Price is £9.99 plus £1.50 post and packing.

Reports from America say that none of the major software producers have written anything for the Atari in the last six months. They are watching and waiting. The future is firmly in Atari's hands.

LONG JOHN SILVER's LAST STAND? By now a Private Members Bill sponsored by the Federation Against Software Theft should be receiving its final reading and is expected to become law. This Bill makes it a criminal offence to distribute or import software on which someone else has copyright. Penalties proposed are an unlimited fine or two years imprisonment. In additon it will be illegal to sell, exhibit *or possess* such software. Penalties would be up to £2000 fine or two months imprisonment. So far software companies have not taken action as a civil case would cost more than was being gained but, if this Bill becomes law, all that a company needs to do is get someone to hire a program from one of the less reputable hire libraries, or buy one through the small ads, and if it is a copy just pass it to the Police and sit back. Watch the papers, the next time you find yourself with a copy of a program you could well be committing a criminal offence.

FLIGHT OF THE SWAN. The disk version as listed will only work with DOS 2.0. Remedy is to replace all reference to 15000 in lines 20, 1100 and 1117 with 1790.

MUSIC MAKER from issue 13 will not run in 16k. Oops...sorry!

GANGSTERS

We received several calls saying that Gangsters would not run on the 600XL or the 800XL despite TYPO showing a correct table. It does run on the XL series, *it was written on an 800XL*. Investigation reveals that there may well be a number of XLs with faulty BASIC. Robert Katz of Atari proved very helpful in trying to pinpoint the fault but was unable to recreate the problem which lies in the corruption of the variable name/statement pointers when CSAVEing. Revision B Basic is said to be the culprit although the machine used for writing the program had Revision B.

Revision C basic should cure it by doing the following.

1. CLOAD or LOAD the listing.
2. LIST the file to cassette or disk with LIST "C:" or LIST "D:filename".
3. Switch off, insert Rev. C cartridge and power up.
4. ENTER the listing with ENTER "C:" or ENTER "D:filename".
5. Resave using CSAVE or SAVE.

If that does not work you could always type it in again with Rev. C in place. If it still does not work (having checked with TYPO) then your machine must be faulty.

NOTE: Before parting with your cash for a Revision C BASIC, check that you don't already have one!. Type PRINT PEEK(49145) and press RETURN. If you get 96 you have Rev. A, 114 means Rev. B and 0 means that Rev. C is already in place.

Readers write

CHILDRENS TREAT

Dear Les,

Besides being an enthusiastic Atari owner who wanders around in ever decreasing circles in Sands of Egypt, I am, in my saner moments, a Charge Nurse of the Childrens Ward of Lewisham Hospital in London.

We were recently contacted by a local charity group who said that they had raised some money to buy a computer for the children of the ward. Imagine my surprise when it turned out to be a brand new Atari 800XL! They obviously knew a great computer when they saw one!

I have been able to supply a few cassettes that I no longer use which are now in constant use by the children but I wonder if I could ask through your columns if other Atari owners would be willing to donate cassettes or cartridges that they no longer use to a worthy cause. We cater for 23 children at one time and they are of all ages right up to 16 years. Many of these are confined to bed for long periods for a wide variety of reasons and the computer will help to reduce some of the boredom they experience.

If anyone is willing to donate a cassette or cartridge they should be sent direct to WARD C2 (Paediatric Ward), Lewisham Hospital, London. S.E.13.

Paul Boggust,
London

°° *A few items are winging their way to Ward C2 from PAGE 6. How about you? Do you really still want that game you haven't played for months?*

410 PROBLEMS SOLVED

Dear Les,

I have had several problems with loading boot tapes on my 410 recorder and therefore read with interest the letter in issue 12 regarding modifications.

I decided to investigate and removed the back cover of my recorder to reveal the soldered side of a circuit board and then removed the four screws holding the circuit board to the cassette mechanics enabling me to take a close look at the components. There was indeed a 330k resistor, in fact there were two, so which one to replace?

I decided to start with the 240k and found it to be connected across an operational amplifier, one of four within the LM324 microchip. This resistor is connected across the output and negative input of the op-amp, commonly known as negative feedback, but more importantly this resistor is used in the calculation of the gain of the amplifier. On checking the 330k resistors, I found one of them was also used in negative feedback, hence I concluded that these were the two referred to in Mr. Fleming's letter. With soldering iron in hand I replaced these two 240k and 330k resistors with more accurate ones and fitted the recorder back together.

Now came the test. I tried Colossal Adventure, a cassette that I was previously unable to load and to my amazement it worked! Thanks to PAGE 6 and Kevin Fleming, I have saved a service fee and the trouble of having my 410 checked out.

J.F.Nugent,
Peterborough

°° *Glad to see it works. In view of all the problems that owners have had with their recorders, there must be an opportunity here for some enterprising hobbyist to offer a 'resistor replacement' service for a small fee thus solving a lot of problems for the less technically minded as well as making a few bob for themselves.*

....ANOTHER SOLUTION

Dear Les,

A couple of months ago I had problems loading English Software's ACE program. Every time I took it back to the shop it would load fine but when I got it home, no go.

In frustration and anger I checked the shop's system against my own and found that the only difference was that they were using one transformer for both the 800 and the 410 recorder whilst I had a seperate transformer for each. Luckily the transformer for my 800 was one of the older type with the extra socket for a cassette, so I wired it up and have had no problems since! Even tapes that gave me problems before load first time now.

I thought that this might be worth mentioning in case it helps somebody else. It seems that there may be a small difference in speed with different transformers.

Bjorn Deutschmann,
Guernsey

BULL ANTS

Dear Les,

Congratulations, issue 13 is excellent, however I noticed a couple of mistakes or improvements.

Line 335 of Bull Ants has IF SS2=5. This should be S2. I also had great difficulty in typing lines 2000 and 2002. Perhaps you could print them again?

I liked Camelot but when the game ends and the castle appears again, all the Player Missiles are still on screen. The following lines will rectify this.

```
1280 FOR Z=0 TO 3:POKE 53248+Z,0:N.Z
1281 FOR Z=0 TO 22:COLOR 32:PLOT 0,Z:DRAWTO 19,Z:N.Z
1286 FOR Z=0 TO 3:POKE 53248+Z,0:N.Z
```

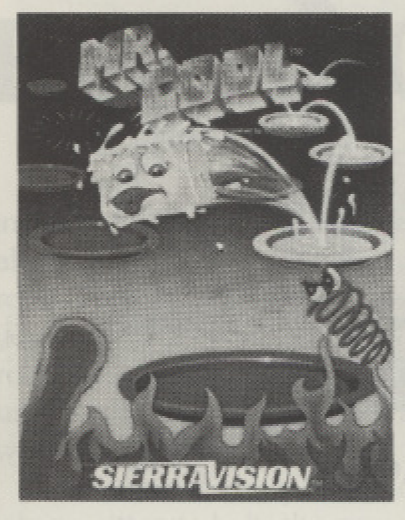
S. Cant,
Staffs

°° *So many people had trouble with the control characters in Bull Ants. Here they are in full:*

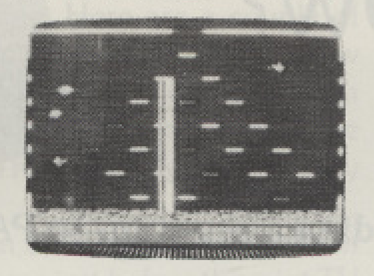
Line 2000 ESC-CTRL-LEFT ARROW, CTRL-COMMA, INVERSE N, SHIFT-ASTERISK, INVERSE CTRL-F, ESC-CTRL-LEFT ARROW, CTRL-COMMA INVERSE N, SHIFT-ASTERISK, CTRL-COMMA, ESC-CTRL-UP ARROW, CTRL-COMMA, INVERSE L, SHIFT-PLUS, CTRL-COMMA, ESC-CTRL-UP ARROW, CTRL-COMMA,INVERSE L, SHIFT-PLUS, CTRL-COMMA, CONTROL-Z, CTRL-COMMA, INVERSE J, Z, CTRL-COMMA, CTRL-X, CTRL-COMMA, INVERSE J, Z, CTRL-COMMA, CTRL-V, CTRL-COMMA, INVERSE H, X, CTRL-COMMA, CTRL-T, CTRL-N, INVERSE H, X, CTRL-COMMA, CTRL-R, CTRL-N, CTRL-N, CTRL-N, CTRL-P, CTRL-P, CTRL-COMMA, CTRL-COMMA, CTRL-COMMA, CTRL-P

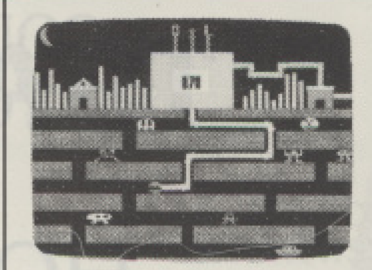
LINE 2002 H, INVERSE CTRL-J, H, INVERSE CTRL-X, H, INVERSE QUOTES, CTRL-COMMA, INVERSE MINUS, CTRL-K, INVERSE T, INVERSE I, CTRL-G, INVERSE p, CTRL-C, INVERSE FULL STOP, CTRL-A, CTRL-B, INVERSE SPACE, CTRL-COMMA, INVERSE EQUALS, CTRL-C, CTRL-D, INVERSE CTRL-Y, CTRL-V, INVERSE P, INVERSE h, INVERSE H, INVERSE-SHIFT 8, CTRL-E, INVERSE P, INVERSE t, INVERSE CTRL-N, CTRL-E, CTRL-F, h, INVERSE OPEN BRACKET, h, INVERSE ASTERISK, h, SHIFT 8, CTRL-COMMA, CTRL-A, CTRL-B, CTRL-C, CTRL-D, CTRL-E

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HOW?



By writing an article or sending a program to PAGE 6

Over the next five issues we will be giving away an AtariWriter cartridge to the author of the best article received and a Paint! cartridge to the author of the best program submitted. All contributions received will be re-considered prior to publication of each issue so that if you do not receive the award for a particular issue, your article or program will still be in the running for the next issue. In addition to this all articles or programs published will still be eligible for awards in the annual Readers Poll so it really is worth writing an article or sending in a program.

Articles may be on any subject of interest to Atari users and should be of at least one magazine page length. Diagrams, charts, illustrations or even photgraphs(!) may be included if you wish. Programs can be for any memory size and may be games, utilities or more serious programs provided they are of general interest. If possible please submit articles and programs on a DOS 2 disk (which will be returned or replaced by a disk from the PAGE 6 library). Any DOS 2 compatible word processor may be used. If you do not have a disk drive please use cassette but ensure that TWO copies are recorded, one of which should use LIST "C:". Hard copy listings of programs are not required but documentation explaining how to use the program should be included. Typewritten or handwritten articles are still welcome if you cannot manage disk or cassette and will be given equal consideration. Written program listings will not however be accepted.

Let's see your articles and programs. Best of luck!

To start the ball rolling the first award of an AtariWriter cartridge goes to Mark Hutchinson for his (epic!) A-Z guide for beginners in Atari Basic.

LISTING CONVENTIONS - READ BEFORE TYPING

The program listings in PAGE 6 are prepared to match exactly what you see on the screen. The following chart shows all of the characters used as they would appear in a listing. CONTROL characters and Inverse tend to join together in listings so care should be taken over these. Use TYPO or TYPO II to check your typing and ALWAYS save a copy of any program before running it.

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
1	1	!	!		
2	2	"	"		
3	3	#	#		
4	4	$	$		
5	5	%	%		
6	6	&	&		
7	7	'	'		
8	8	@	@		
9	9	(	(		
0	0	)	)		
<	<				
>	>				
a	a	A	A	┣	┣
b	b	B	B	┃	┃
c	c	C	C	┛	┛
d	d	D	D	┫	┫

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
e	e	E	E	┓	┓
f	f	F	F	╱	╱
g	g	G	G	╲	╲
h	h	H	H	◢	◢
i	i	I	I	▗	▗
j	j	J	J	◣	◣
k	k	K	K	▝	▝
l	l	L	L	▘	▘
m	m	M	M	▔	▔
n	n	N	N	▁	▁
o	o	O	O	▖	▖
p	p	P	P	♣	♣
q	q	Q	Q	┏	┏
r	r	R	R	━	━
s	s	S	S	╋	╋
t	t	T	T	●	●

Lower case	Inverse lower	Upper case or Shift	Inverse Upper or Shift	CTRL	Inverse CTRL
u	u	U	U	▄	▄
v	v	V	V	▎	▎
w	w	W	W	┳	┳
x	x	X	X	┻	┻
y	y	Y	Y	▌	▌
z	z	Z	Z	┗	┗
-	-	_	_		
=	=	|	|		
;	;	:	:	♠	♠
+	+	\	\		
*	*	^	^		
,	,	[	[	♥	♥
.	.	]	]	◆	◆
/	/	?	?		

█ INVERSE SPACE

Symbol	Keys
␛	ESC ESC
↑	ESC CTRL -
↓	ESC CTRL =
←	ESC CTRL +
→	ESC CTRL *
↖	ESC SHIFT CLEAR
◀	ESC DELETE
▶	ESC TAB
⍐	ESC SHIFT DELETE
⍗	ESC SHIFT INSERT
⍇	ESC CTRL TAB
⍈	ESC SHIFT TAB
⍓	ESC CTRL 2
⍃	ESC CTRL DELETE
⍄	ESC CTRL INSERT

RAINBOW START

by Robin Clark

Colourflow in issue 11 provided a great effect for introductions to your programs but was limited as it did not allow a branch out of the routine. Here are a couple of routines which will give the same effect but which will allow you to exit them when the START key is pressed. Both routines are given as BASIC DATA statements and can be used as shown but for those who may like to know how they work I will explain.

In the Atari there is a location $D40A (WSYNC) which when written to halts the processor just before the next TV line is drawn. A second location next to it $D40B (VCOUNT) counts, in multiples of two, how many lines down the TV the line being generated is. The Atari has 128 colours so if we wait for horizontal synchronisation and change the colour we can have a different colour on every line of the screen

```
        LDA RANDOM
        STA WSYNC
        STA COLREG
          and round again
```

Note the hardware colour registers should be used ($D016 to $D01A) and not the shadow registers.

This tends to look rather messy. If we instead load the contents of VCOUNT first into WSYNC to synchronise the screen and then into the colour register before jumping back again half of the 128 colours will be put on the screen.

```
LH 10 REM >RAINBOW START - NARROW BANDS<
BA 15 REM >      by Robin Clark        <
UD 20 GRAPHICS 18:? #6;" *** PRESS START
   *** "
SH 25 TRAP 70
KF 30 FOR D=1536 TO 1560:READ M:POKE D,M:
   NEXT D
UO 40 DATA 104,173,11,212,101,20,10,141,1
   0
GN 50 DATA 212,141,22,208,173,31,208
GJ 60 DATA 201,6,240,3,76,1,6,96
VS 70 X=USR(1536)
SV 80 ? "OUT"
```

```
HT 10 REM > RAINBOW START - WIDE BANDS <
BA 15 REM >      by Robin Clark        <
UD 20 GRAPHICS 18:? #6;" *** PRESS START
   *** "
SH 25 TRAP 70
KF 30 FOR D=1536 TO 1560:READ M:POKE D,M:
   NEXT D
VQ 40 DATA 104,173,11,212,101,20,141,10
GN 50 DATA 212,141,22,208,173,31,208
GJ 60 DATA 201,6,240,3,76,1,6,96
VS 70 X=USR(1536)
SV 80 ? "OUT"
```

```
START   LDA VCOUNT    ; So as VCOUNT
        STA WSYNC     ; INCREMENTS
        STA $D01A     ; so does the
        JMP START     ; colour register
```

Now to move the colours up (or down) the screen we need to add or subtract something that is continually changing. Fortunately we have the real time clock ($14) which increments every 50th of a second. Adding this to the number of VCOUNT will make the colours appear to move up the screen.

```
START   LDA VCOUNT
        ADC $14       ; Real time clock
        STA WSYNC
        STA $D01A
        JMP START
```

As VCOUNT counts every two lines down the screen we could multiply the number obtained from VCOUNT by two each time a number was put into the colour register and it would change the colour and narrow the band as shown in program 2. The easiest way to multiply by two in machine code is to shift everything left. So now we have

```
START   LDA $D40B
        ADC $14
        ASL A
        STA $D40A
        STA $D01A ; Border OS col. reg.
        JMP START
```

Finally we need to load the contents of $D01F (CONSOL) to check if the START key has been pressed. If the value here is 6 (START key pressed) we branch to OUT (Return from Subroutine) otherwise we jump back to the beginning of our routine.

```
START   LDA $D40B
        ADC $14
        ASL A
        STA $D40A
        STA $D01A
        LDA $D01F
        CMP #6
        BEQ OUT
        JMP $601
OUT     RTS
```

You can use the BASIC programs to start your own programs. The number 22 in line 50 can be changed to any number between 22 and 26 to affect different colour registers. Owners of Attack of the Mutant Camels might very well recognise the effect! ●

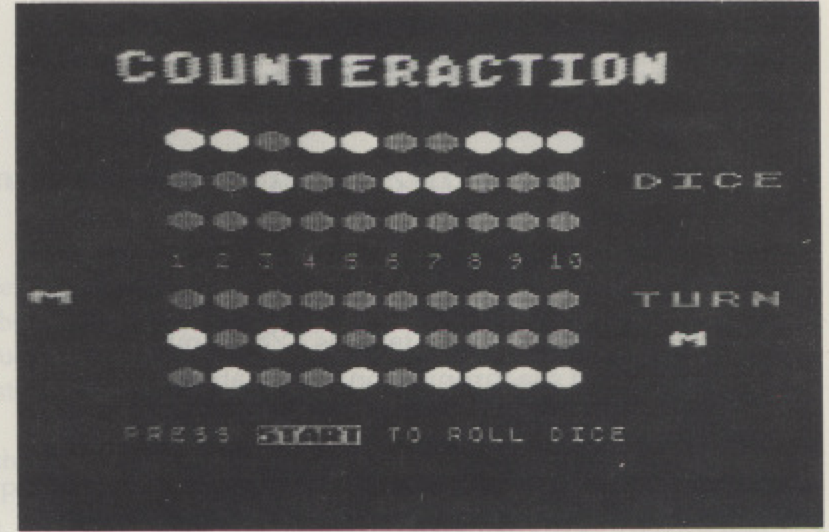
COUNTER ACTION

Counteraction is a two player game that requires at least 32k memory. All instructions for play are included in the listing.

Although appearing quite simple, there is a great deal of strategy involved in deciding whether to move your own or your opponents counters and games can last some time. Each player continues to throw the dice until he can no longer move. The initials of each player (two letters) are entered at the commencement of play although these will not show up as they are entered. Where alternative moves are possible you will be given the choice before the computer moves the appropriate counter.

It is suggested that you play a few practice games to get the idea before taking on an opponent in earnest!

As the listing is quite long, the author is willing to provide copies on cassette. Send £2.50 to Ken Woodward, 42, Partridge Road, Llanhilleth, Abertillery, Gwent, NP3 2JE. Tel. 0495 215222. Please ensure that your address is included and is legible.



by Ken Woodward

```
AE 10 REM ******************************
XJ 20 REM *       COUNTERACTION        *
EK 30 REM *             by             *
AE 40 REM *         K. Woodward        *
AI 50 REM ******************************
BD 60 REM
MC 100 GOTO 120
AI 110 POKE 16,64:POKE 53744,64:RETURN
YH 120 GRAPHICS 0:GOSUB 110:POKE 709,16:P
   OKE 710,0:RESTORE 2770:FOR N=0 TO 99:R
   EAD X:POKE 1664+N,X:NEXT N
LD 130 CLOSE #1
GJ 140 DIM INIT1$(2),INIT2$(2),BLANK$(37)
   :BLANK$=" ":BLANK$(37)=BLANK$:BLANK$(2
   )=BLANK$:SON=PEEK(559):SOFF=0:HOLD=0
BH 150 DIM JOIN$(4),SPLIT1$(4),SPLIT2$(4)
   ,T1$(10),T2$(10):Y=89:N=78:COL=6
FJ 160 GRAPHICS 1:GOSUB 110
WC 170 POKE 559,SOFF:BEGIN=PEEK(560)+PEEK
   (561)*256+4:POKE BEGIN-1,71:POKE BEGIN
   +2,7
DZ 180 FOR LINE=3 TO 21:POKE BEGIN+LINE,6
   :NEXT LINE
MQ 190 POKE BEGIN+22,65:POKE BEGIN+23,PEE
   K(560):POKE BEGIN+24,PEEK(561)
QR 200 ? #6;"   counterACTION"
ZF 210 POSITION 9,4:? #6;"by":POSITION 4,
   6:? #6;"ken woodward":POSITION 6,2:? #
   6;"(c)1983"
TW 220 POSITION 1,8:? #6;"(a two player g
   ame)"
TV 230 POKE 559,SON
TK 240 GOSUB 2500
IV 250 POSITION 3,14:? #6;"instructions Y
   /N":OPEN #1,4,0,"K:"
DZ 260 GET #1,YN:IF YN=Y THEN GOTO 2700
QO 270 IF YN=N THEN FOR W=1 TO 100:NEXT W
   :GOTO 290
OV 280 GOTO 260
DX 290 POKE 694,128:POKE 702,0
TQ 300 POSITION 0,14:? #6;"PLAYER ONE ini
   tials?";:GOSUB 630:INPUT INIT1$
AW 310 POSITION 0,16:? #6;"PLAYER TWO ini
   tials?";:GOSUB 630:INPUT INIT2$:POKE 6
   94,0:POKE 702,64
MG 320 REM MAIN GAME SCREEN*************
ER 330 GRAPHICS 0:GOSUB 110
VY 340 POKE 559,SOFF:BEGIN=PEEK(560)+PEEK
   (561)*256+4:POKE BEGIN-1,71:POKE BEGIN
   +2,7
DY 350 FOR LINE=3 TO 16:POKE BEGIN+LINE,6
   :NEXT LINE:POKE BEGIN+9,2:POKE BEGIN+1
   0,2
KR 360 FOR LINE=17 TO 22:POKE BEGIN+LINE,
   2:NEXT LINE
ZC 370 POKE BEGIN+21,6:POKE BEGIN+22,6
QV 380 POKE BEGIN+23,65:POKE BEGIN+24,PEE
   K(560):POKE BEGIN+25,PEEK(561)
VC 390 POKE BEGIN+24,65:POKE BEGIN+25,PEE
   K(560):POKE BEGIN+26,PEEK(561)
UG 400 DIM A$(10),B$(10),C$(10),D$(10),E$
   (10),F$(10),NUMBER$(24),TEST$(10):NUMB
   ER$=" 1 2 3 4 5 6 7 8 9 10"
```

```
EU 410 A$="X":A$(10)=A$:A$(2)=A$
TG 420 B$="x":B$(10)=B$:B$(2)=B$
WZ 430 C$=B$:D$=B$:E$=B$:F$=A$:TEST$=B$
HH 440 POKE 752,1:POKE 756,CHPAGE:POKE 82,3
JT 450 ? #6;"counteraction":? #6;A$:? #6;B$:? #6;C$:? #6;" ";NUMBER$:? #6;"":? #6;D$:? #6;E$:? #6;F$
RW 460 POSITION 14,2:? #6;"dice":POSITION 14,6:? #6;"turn":TURN=1
OX 470 POSITION 0,1:? #6;INIT1$
TC 480 POSITION 0,6:? #6;INIT2$
OP 490 POKE 710,0:POKE 712,0:POKE 708,40:POKE 711,100:POKE 709,4:POKE 559,SON
RQ 500 REM START GAME HERE
QZ 510 GOSUB 630:REM ERASE
KX 520 POSITION 14,3:? #6;"     "
SH 530 POSITION 4,10:? "PRESS START TO ROLL DICE":POKE 77,0
ON 540 IF TURN=1 THEN POSITION 14,7:? #6;" ";INIT1$;" ":GOTO 880
ZZ 550 IF TURN=2 THEN POSITION 14,7:? #6;" ";INIT2$;" ":GOTO 1210
MA 560 REM ROLL DICE****************
LH 570 POSITION 14,3:? #6;"    "
YN 580 FOR W=1 TO 50
JL 590 D1=INT(6*RND(0))+1:D2=INT(6*RND(0))+1
BG 600 POSITION 14,3:? #6;D1:POSITION 17,3:? #6;D2:SOUND 0,D1,10,8:SOUND 1,D2,10,8:SOUND 0,0,0,0:SOUND 1,0,0,0
LI 610 NEXT W
DY 620 D3=D1+D2:RETURN
FW 630 REM ERASER******************
BH 640 POSITION 2,10:? #6;BLANK$
CA 650 POSITION 2,11:? #6;BLANK$
LT 660 SOUND 0,50,10,8:FOR W=1 TO 25:NEXT W:SOUND 0,0,0,0
ZQ 670 RETURN
ND 680 REM COMBINE?
PU 690 POSITION 4,10:? "DO YOU WANT TO COMBINE THE DICE":GET #1,YN
CH 700 IF YN<>Y THEN IF YN<>N THEN GOTO 690
AR 710 GOSUB 630:IF YN=Y THEN POSITION 14,3:? #6;" ";D3;" ":PASS=0
ZH 720 RETURN
WX 730 POSITION 4,10:? "I MUST MOVE YOUR OPPONENT":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
MC 740 POSITION 4,10:? "I MUST MOVE YOUR COUNTER":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
HB 750 POSITION 4,10:? "DO YOU WANT TO MOVE YOURS":GET #1,YN
YF 760 IF YN<>Y THEN IF YN<>N THEN GOTO 750
LL 770 GOSUB 630:RETURN
BF 780 POSITION 4,10:? "OK MOVING YOUR OPPONENT":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
WU 790 POSITION 4,10:? "OK MOVING YOUR COUNTER":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
ZL 800 POSITION 4,10:? "YOU CAN ONLY COMBINE":FOR W=1 TO 750:NEXT W:POSITION 14,3:? #6;" ";D3;" ":GOSUB 630
KW 810 PASS=0:RETURN
HC 820 POSITION 4,10:? "YOU CAN ONLY SPLIT":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
XV 830 POSITION 4,10:? "SORRY YOU CANNOT MOVE"
MC 840 SOUND 0,50,10,8:FOR W=1 TO 50:NEXT W:SOUND 0,99,10,8:FOR W=1 TO 50:NEXT W:SOUND 0,0,0,0
JS 850 FOR W=1 TO 500:NEXT W
LK 860 GOSUB 630:RETURN
HT 870 POSITION 4,10:? "I MUST MOVE BOTH NUMBER ";D1;" COUNTERS":FOR W=1 TO 750:NEXT W:GOSUB 630:RETURN
ZI 880 REM PLAYER ONE STARTS HERE
TG 890 IF PEEK(53279)<>6 THEN GOTO 890
RB 900 GOSUB 630:REM ERASE
HD 910 GOSUB 560:REM ROLL DICE
CP 920 REM TEST FOR COMBINE 1
IX 930 T1$=A$:GOSUB 1990:T2$=E$:GOSUB 1530:PASS=2
EW 940 IF SPLIT1$="NO" OR SPLIT2$="NO" THEN IF JOIN$="NO" THEN GOSUB 830:GOTO 2290:REM NOMOVE
RA 950 IF SPLIT1$="NO" OR SPLIT2$="NO" THEN IF JOIN$<>"NO" THEN GOSUB 800:GOTO 1010:REM MUSTJOIN
PA 960 IF SPLIT1$<>"NO" AND SPLIT2$<>"NO" AND JOIN$<>"NO" THEN GOSUB 690:GOTO 990:REM WANT TO JOIN
RS 970 IF SPLIT1$<>"NO" AND SPLIT2$<>"NO" AND JOIN$="NO" THEN GOSUB 820:GOTO 1080:REM MUSTSPLIT
RK 980 REM
OU 990 IF YN=Y THEN GOTO 1010
RB 1000 GOTO 1090
DD 1010 PASS=0:IF JOIN$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1050
TW 1020 IF JOIN$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1070
IF 1030 IF JOIN$="YOU" THEN GOSUB 740:GOTO 1050
BK 1040 IF JOIN$="OPP" THEN GOSUB 730:GOTO 1070
IL 1050 REM
RA 1060 A$(D3,D3)="x":B$(D3,D3)="X":GOTO 2210
VD 1070 E$(D3,D3)="x":F$(D3,D3)="X":GOTO 2210
IU 1080 REM
TP 1090 IF SPLIT1$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1130
ZR 1100 IF SPLIT1$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1140
TR 1110 IF SPLIT1$="YOU" THEN GOSUB 740:GOTO 1130
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KD 1120 IF SPLIT1$="OPP" THEN GOSUB 730:GOTO 1140
LB 1130 A$(D1,D1)="x":B$(D1,D1)="X":GOTO 2210
PE 1140 E$(D1,D1)="x":F$(D1,D1)="X":GOTO 2210
JR 1150 IF SPLIT2$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1190
UN 1160 IF SPLIT2$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1200
FH 1170 IF SPLIT2$="YOU" THEN GOSUB 740:GOTO 1190
GD 1180 IF SPLIT2$="OPP" THEN GOSUB 730:GOTO 1200
OP 1190 A$(D2,D2)="x":B$(D2,D2)="X":GOTO 2210
RQ 1200 E$(D2,D2)="x":F$(D2,D2)="X":GOTO 2210
UH 1210 REM PLAYER TWO STARTS HERE
VM 1220 IF PEEK(53279)<>6 THEN GOTO 1220
WD 1230 GOSUB 630:REM ERASE
WC 1240 GOSUB 560:REM ROLL DICE
AL 1250 REM TEST FOR COMBINE 1
YM 1260 T1$=F$:GOSUB 2100:T2$=B$:GOSUB 1530:PASS=2
SK 1270 IF SPLIT1$="NO" OR SPLIT2$="NO" THEN IF JOIN$="NO" THEN GOSUB 830:GOTO 2290:REM NOMOVE
LW 1280 IF SPLIT1$="NO" OR SPLIT2$="NO" THEN IF JOIN$<>"NO" THEN GOSUB 800:GOTO 1330:REM MUSTJOIN
WS 1290 IF SPLIT1$<>"NO" AND SPLIT2$<>"NO" AND JOIN$<>"NO" THEN GOSUB 690:GOTO 1310:REM WANT TO JOIN
MY 1300 IF SPLIT1$<>"NO" AND SPLIT2$<>"NO" AND JOIN$="NO" THEN GOSUB 820:GOTO 1400:REM MUSTSPLIT
DK 1310 IF YN=Y THEN GOTO 1330
PJ 1320 GOTO 1410
RS 1330 PASS=0:IF JOIN$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1370
EK 1340 IF JOIN$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1390
QV 1350 IF JOIN$="YOU" THEN GOSUB 740:GOTO 1370
KA 1360 IF JOIN$="OPP" THEN GOSUB 730:GOTO 1390
IX 1370 REM
UY 1380 F$(D3,D3)="x":E$(D3,D3)="X":GOTO 2210
RB 1390 B$(D3,D3)="x":A$(D3,D3)="X":GOTO 2210
IE 1400 REM
GD 1410 IF SPLIT1$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1450
KP 1420 IF SPLIT1$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1460
CR 1430 IF SPLIT1$="YOU" THEN GOSUB 740:GOTO 1450
TD 1440 IF SPLIT1$="OPP" THEN GOSUB 730:GOTO 1460
OZ 1450 F$(D1,D1)="x":E$(D1,D1)="X":GOTO 2210
LC 1460 B$(D1,D1)="x":A$(D1,D1)="X":GOTO 2210
ZJ 1470 IF SPLIT2$="BOTH" THEN GOSUB 750:IF YN=Y THEN GOSUB 790:GOTO 1510
FL 1480 IF SPLIT2$="BOTH" AND YN=N THEN GOSUB 780:GOTO 1520
YR 1490 IF SPLIT2$="YOU" THEN GOSUB 740:GOTO 1510
OB 1500 IF SPLIT2$="OPP" THEN GOSUB 730:GOTO 1520
RL 1510 F$(D2,D2)="x":E$(D2,D2)="X":GOTO 2210
NO 1520 B$(D2,D2)="x":A$(D2,D2)="X":GOTO 2210
OY 1530 REM TEST FOR MOVE COMBINE
HI 1540 IF D3>10 THEN JOIN$="NO":GOTO 1590
SX 1550 IF T1$(D3,D3)="X" AND T2$(D3,D3)="X" THEN JOIN$="BOTH":GOTO 1590
VJ 1560 IF T1$(D3,D3)="X" AND T2$(D3,D3)<>"X" THEN JOIN$="YOU":GOTO 1590
LV 1570 IF T1$(D3,D3)<>"X" AND T2$(D3,D3)="X" THEN JOIN$="OPP":GOTO 1590
VR 1580 IF T1$(D3,D3)<>"X" AND T2$(D3,D3)<>"X" THEN JOIN$="NO"
CF 1590 IF D1=D2 THEN POP :GOTO 1710
NJ 1600 REM TEST FOR MOVE SPLIT 1
UU 1610 IF T1$(D1,D1)="X" AND T2$(D1,D1)="X" THEN SPLIT1$="BOTH"
YZ 1620 IF T1$(D1,D1)="X" AND T2$(D1,D1)<>"X" THEN SPLIT1$="YOU"
OF 1630 IF T1$(D1,D1)<>"X" AND T2$(D1,D1)="X" THEN SPLIT1$="OPP"
TK 1640 IF T1$(D1,D1)<>"X" AND T2$(D1,D1)<>"X" THEN SPLIT1$="NO"
PC 1650 REM TEST FOR MOVE SPLIT 2
BG 1660 IF T1$(D2,D2)="X" AND T2$(D2,D2)="X" THEN SPLIT2$="BOTH"
FM 1670 IF T1$(D2,D2)="X" AND T2$(D2,D2)<>"X" THEN SPLIT2$="YOU"
UU 1680 IF T1$(D2,D2)<>"X" AND T2$(D2,D2)="X" THEN SPLIT2$="OPP"
AA 1690 IF T1$(D2,D2)<>"X" AND T2$(D2,D2)<>"X" THEN SPLIT2$="NO"
AN 1700 RETURN
TC 1710 REM TEST FOR TWO THE SAME
GG 1720 IF TURN=1 THEN T1$=A$:T2$=E$
IA 1730 IF TURN=2 THEN T1$=F$:T2$=B$
LR 1740 SPLIT1$="K"
YS 1750 YN=0
UR 1760 IF T1$(D1,D1)<>"X" OR T2$(D1,D1)<>"X" THEN SPLIT1$="NO"
TX 1770 IF SPLIT1$="NO" AND JOIN$="NO" THEN GOSUB 830:GOTO 2290
AV 1780 IF SPLIT1$<>"NO" AND JOIN$<>"NO" THEN GOSUB 690:IF YN=N THEN GOTO 1860
LT 1790 IF YN=Y THEN IF JOIN$="BOTH" THEN GOSUB 750:GOTO 1910.
NX 1800 IF YN=Y THEN IF JOIN$="OPP" THEN GOSUB 730:GOTO 1890
BL 1810 IF YN=Y THEN IF JOIN$="YOU" THEN GOSUB 740:GOTO 1870
```

```
MY 1820 IF SPLIT1$<>"NO" AND JOIN$="NO" T
   HEN GOTO 1860
HQ 1830 IF SPLIT1$="NO" AND JOIN$="YOU" T
   HEN GOSUB 800:GOSUB 740:GOTO 1870
SS 1840 IF SPLIT1$="NO" AND JOIN$="OPP" T
   HEN GOSUB 800:GOSUB 730:GOTO 1890
UQ 1850 IF SPLIT1$="NO" AND JOIN$="BOTH"
   THEN GOSUB 800:GOSUB 750:GOTO 1910
KU 1860 GOSUB 870:GOTO 1970
YX 1870 IF TURN=1 THEN A$(D3,D3)="x":B$(D
   3,D3)="X":PASS=0:GOTO 2210
HQ 1880 IF TURN=2 THEN F$(D3,D3)="x":E$(D
   3,D3)="X":PASS=0:GOTO 2210
QX 1890 IF TURN=2 THEN A$(D3,D3)="X":B$(D
   3,D3)="x":PASS=0:GOTO 2210
XM 1900 IF TURN=1 THEN F$(D3,D3)="X":E$(D
   3,D3)="x":PASS=0:GOTO 2210
UQ 1910 IF YN=Y AND TURN=1 THEN GOSUB 790
   :GOTO 1870
XL 1920 IF YN=Y AND TURN=2 THEN GOSUB 790
   :GOTO 1880
FK 1930 IF TURN=1 THEN GOSUB 780:GOTO 196
   0
KJ 1940 IF TURN=2 THEN GOSUB 780
GN 1950 B$(D3,D3)="x":A$(D3,D3)="X":PASS=
   0:GOTO 2210
LE 1960 E$(D3,D3)="x":F$(D3,D3)="X":PASS=
   0:GOTO 2210
BE 1970 IF TURN=1 THEN A$(D1,D1)="x":F$(D
   1,D1)="X":B$(D1,D1)="X":E$(D1,D1)="x":
   PASS=0:GOTO 2210
XN 1980 IF TURN=2 THEN F$(D1,D1)="x":A$(D
   1,D1)="X":E$(D1,D1)="X":B$(D1,D1)="x":
   PASS=0:GOTO 2210
ZZ 1990 REM TEST FOR LAST COUNTER
XH 2000 HOLD=0
CQ 2010 IF D3>10 THEN RETURN
RW 2020 FOR X=1 TO 10:IF T1$(X,X)="X" THE
   N HOLD=HOLD+1
LI 2030 NEXT X
GQ 2040 IF HOLD<>1 THEN RETURN
PT 2050 IF T1$(D1,D1)="X" THEN B$(D1,D1)=
   "X"
TS 2060 IF T1$(D2,D2)="X" THEN B$(D2,D2)=
   "X"
XR 2070 IF T1$(D3,D3)="X" THEN B$(D3,D3)=
   "X"
FR 2080 IF T1$(D1,D1)="X" OR T1$(D2,D2)="
   X" OR T1$(D3,D3)="X" THEN A$=TEST$:PAS
   S=0:POP :GOTO 2210
BB 2090 RETURN
YJ 2100 REM TEST FOR LAST COUNTER
XM 2110 HOLD=0
CV 2120 IF D3>10 THEN RETURN
SB 2130 FOR X=1 TO 10:IF T1$(X,X)="X" THE
   N HOLD=HOLD+1
LN 2140 NEXT X
DS 2150 IF HOLD<>1 THEN HOLD=0:RETURN
TH 2160 IF T1$(D1,D1)="X" THEN E$(D1,D1)=
   "X"
XG 2170 IF T1$(D2,D2)="X" THEN E$(D2,D2)=
   "X"
BF 2180 IF T1$(D3,D3)="X" THEN E$(D3,D3)=
   "X"
SJ 2190 IF T1$(D1,D1)="X" OR T1$(D2,D2)="
   X" OR T1$(D3,D3)="X" THEN F$=TEST$:PAS
   S=0:POP :GOTO 2210
AE 2200 RETURN
VY 2210 POSITION 3,1
ZO 2220 ? #6;A$:? #6;B$:? #6;C$
ZL 2230 POSITION 3,6
GJ 2240 ? #6;D$:? #6;E$:? #6;F$
CH 2250 IF TURN=1 AND PASS=2 THEN PASS=0:
   GOTO 1150
LR 2260 IF TURN=2 AND PASS=2 THEN PASS=0:
   GOTO 1470
IY 2270 IF TURN=1 THEN GOTO 2350
KR 2280 IF TURN=2 THEN GOTO 2360
GG 2290 IF TURN=1 THEN TURN=2:GOTO 2310
HN 2300 IF TURN=2 THEN TURN=1:GOTO 2330
KA 2310 FOR X=1 TO 10:IF E$(X,X)="X" THEN
   E$(X,X)="x":D$(X,X)="X"
VR 2320 NEXT X:GOTO 2350
AZ 2330 FOR X=1 TO 10:IF B$(X,X)="X" THEN
    B$(X,X)="x":C$(X,X)="X"
WR 2340 NEXT X:GOTO 2360
QF 2350 IF A$=TEST$ THEN POSITION 2,13:?
   #6;INIT1$;" is the winner ":GOTO 2420
TV 2360 IF F$=TEST$ THEN POSITION 2,13:?
   #6;INIT2$;" is the winner ":GOTO 2420
WS 2370 POSITION 3,1
AI 2380 ? #6;A$:? #6;B$:? #6;C$
AF 2390 POSITION 3,6
GB 2400 ? #6;D$:? #6;E$:? #6;F$
PU 2410 GOTO 520
WI 2420 REM WIN
GF 2430 POSITION 14,7:? #6;"   ":POSITION
    0,1:? #6;" ":POSITION 0,6:? #6;"  "
UM 2440 FOR X=1 TO 255:POKE 711,X:SOUND 0
   ,INT(RND(0)*40)+20,10,8:NEXT X:SOUND 0
   ,0,0,0
LZ 2450 POSITION 1,13:? #6;"press start t
   o play"
CB 2460 POKE 711,COL:COL=COL+32:IF COL>25
   5 THEN COL=6
RK 2470 FOR W=1 TO 25:NEXT W
FX 2480 IF PEEK(53279)<>6 THEN GOTO 2460
NW 2490 RUN
JN 2500 REM *
EE 2510 CHPAGE=INT((INT((PEEK(144)+256*PE
   EK(145))/256)+9)/4)*4
QE 2520 TEMP=USR(ADR("hh.Mh.Lh.Oh.Nhh*p+
   ♥1L.N/PyfMfOJPr♦"),57344,CHPAGE*256,2)
WW 2530 RESTORE 2570:FOR TEMP1=1 TO 1
JE 2540 READ TEMP:TEMP=CHPAGE*256+TEMP*8:
   FOR TEMP2=0 TO 7:READ TEMP3:POKE TEMP+
   TEMP2,TEMP3:NEXT TEMP2
VY 2550 NEXT TEMP1
BC 2560 RETURN
CT 2570 DATA 56,56,124,254,254,254,254,12
   4,56
LK 2580 POKE 752,1:POKE 752,1:POKE 82,4
DJ 2590 POSITION 2,0:? "GAME OBJECT "
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continued on page 49

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TYPO II

We have been using TYPO now for some considerable time (courtesy of ANTIC magazine) and it has certainly helped with typing all those long listings, but it has one major drawback which is that you still have to search through a block of lines to find a mistake.

Now we have **TYPO II** which will check a progam line by line *as you type each line in!* TYPO II will be used in all listings from issue 14 onwards and we hope to make tables available at a later date for all previously published listings.

HOW TO USE TYPO II

TYPO II tells you if you have made a mistake as soon as you have typed in a line. Begin by typing in TYPO II and SAVE a copy to tape or disk. Check the program *very* carefully for although you can use TYPO II to check itself, it may not work if you have made mistakes!

Alongside each line of the listings in this, and future, issues you will find a two letter code which should match the code generated by TYPO II. LOAD and RUN your copy of TYPO II *before typing in a listing.* The screen will say 'Type in a program line'. Type in the line as shown *but not the two letter code.* When you hit RETURN after typing the line, it will re-appear at the bottom of the screen with a two letter code at the left hand side. If this does not match the code printed to the left of the same line in the magazine, you have a mistake in that line. Type the line again until the codes match and then go on to the next line.

If you prefer to type in a listing without TYPO II you can still use it to check each line. Make sure you have a copy of TYPO II LISTed onto disk or cassette and add this to your program by ENTERing it. To check any line type an asterisk (*) followed by the line number *with no space in between* and press RETURN. You will then see the line with a code and can amend it if necessary.

You can LIST your program by pressing BREAK and can then return to TYPO II by typing GOTO 32000.

To save your correct program without TYPO II, LIST it to cassette or disk by typing LIST "C:",0,31999 or LIST "D:filename",0,31999. Type NEW and then ENTER "C:" or ENTER "D:filename". You can then save this version in the normal way with CSAVE or SAVE.

We hope to publish a revision of TYPO II shortly which automatically deletes itself after your program is correctly typed and also TYPOCHECK which will automatically generate codes for programs that you have typed in from previous issues. TYPO II is there to help you enter programs exactly as printed. Please use it as we spend a great deal of time answering queries from people who have not typed in listings correctly.

The original TYPO was written by Bill Wilkinson. TYPO II is by Andy Barton. Both are copyright ANTIC magazine and used with permission.

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↰":POSITION 11,1:? "TYPO II "
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↰":POSITION 11,1:? " TYPO II
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press RETURN and edit line a
   bove.":GOTO 32050
```

6. The Golden Baton

The Adventures covered in the last three issues could only be played on a disk based system. I don't want cassette owners feeling left out of the fun of Adventuring, so this issue we'll take a look at a series of Adventures available on cassette. What makes them all the more interesting for most of you is that they are written and produced in the United Kingdom! I'm referring, of course, to Brian Howarth's Mysterious Adventures.

Background: Brian Howarth had been playing Dungeons and Dragons for some years before being introduced to computer Adventures by a TV program called The Adventure Game. When he realised the potential for computer-moderated Adventures, he raced out and bought the first computer he could find. Unfortunately, this happened to be a TRS-80, but we can't really hold that against him, as the Atari wasn't available at the time.

Howarth became obsessed with Scott Adams' Adventures before trying to write his own. He started writing an Adventure in BASIC, but concluded that it couldn't be done. We can probably put this down to inexperience, as many others (including Scott Adams himself) have proven him wrong. Nevertheless, he started learning machine language and after six months of excitement and frustration, he finished his first machine language Adventure. It was called The Golden Baton and made its first appearance in the Molimerx catalogue in 1981.

Molimerx were ecstatic about the game and persuaded Howarth to do a series like that of his idol. He put together some more scenarios and came up with The Time Machine and Arrow of Death Part 1. Thus, the Mysterious Adventures series was born.

Over the next few months, he developed an Adventure interpreter based along the same lines as that used by Scott Adams. This allowed him to write a new Adventure by merely changing the database. From Arrow of Death Part 2 onwards, all the Mysterious Adventures were written using this technique.

Howarth also decided to translate his Adventures for the newly released BBC micro. As Molimerx were not planning to support the BBC, Howarth set up his own company called Digital Fantasia. He had a mail order service and a software shop and recruited his family and friends to do administration, look after the shop, help with the programming and do the artwork for the packaging on his Adventures. Over a period of time, the series was translated for other computers such as the Atari, Spectrum, VIC-20, Commodore 64 and Dragon.

The Atari translations were done by Howarth and his staff and licensed to Channel 8 Software. Until recently, there were 10 Adventures in the series available only on a 16k cassette. The series has now been expanded to 14 and the earlier titles have been revised. The entire series should be available by the time you read this. The titles are listed below. Note that they are in a slightly different order to the versions available for other computers, so always make sure you order by title rather than number in order to avoid any confusion.

1. The Golden Baton
2. Arrow of Death Part 1
3. Arrow of Death Part 2
4. Escape from Pulsar 7
5. Feasibility Experiment
6. The Time Machine
7. Circus
8. The Wizard of Akyrz
9. Perseus and Andromeda
10. Ten Little Indians
11. Waxworks
12. Mid Winter
13. After the Fire
14. Beyond the Infinite

Review: As The Golden Baton is the first in the series, it seems like the obvious choice to review.

When you first boot the cassette, you are presented with an animated title page. This is quite well done, but is the same on all the Adventures in the series and wears thin after repeated screenings. When the animation sequence is over, the main Adventure is automatically loaded. This whole sequence takes quite a while (especially for someone like me, who's used to disks), so you might as well have a cup of tea while you're waiting.

When the load is complete, you are asked if you would like colour. If you answer Y for YES, the screen is divided into bands of different colours. The intention is that each colour represents a different function, i.e. room description, visible objects, player's input, error messages and so on. Unfortunately, this isn't very well done. The boundaries between the colours are very flickery (particularly when pressing keys) and the distinction between some colours is inadequate. The overall effect is one of confusion. I'd suggest you type N for NO to the colour question and you will get a pleasant dark blue background. Alternatively, I discovered that you can turn the colours on from within the program by typing C [RETURN] or turn them off by typing

by Garry Francis of Sydney, Australia

O [RETURN]. You'll actually need the latter after saving a game, as this causes the colours to be re-enabled whether you wanted them or not. Incidentally, the save is very quick, as it only writes two or three records to cassette.

From this point on, the game's style, screen format and even the very structure of the code and the database (I took a peek) is a direct clone of the Scott Adams series. If you've played a few Scott Adams Adventures, then you'll feel right at home with the Mysterious Adventures.

After the colour question, you are asked whether you want to use a previously saved game (as per Scott Adams), but I'd prefer to see this utilised from within the program itself using a RESTORE command.

After answering both questions, your Adventure is underway. Location descriptions, things you can see and exits are printed at the top of the screen, but are not disturbed by your input or the computer's responses which scroll independently in whatever space is left at the bottom of the screen (as per Scott Adams). You'll probably notice some bad spelling and grammar (as per Scott Adams) and an illogical habit of capitalising some words, but not others. However, unlike Scott Adams, the response time is very fast.

Each of the cassettes comes with playing hints and instructions (which are very good) and a background storyline for each of the Adventures in the series. These are common to the whole series, so if you buy one, you can read about the rest. As for The Golden Baton, the story goes something like this...

The Golden Baton is a priceless artifact which is believed to hold a life-force that maintains an equilibrium between good and evil. As a result, your homeland has suffered no wars, droughts or famines for centuries. (What about unemployment? It sounds like Maggie Thatcher could do with one of these things!) The Golden Baton has been stolen from King Ferrenuil's palace and he fears for the future of his people. Your job is to recover the missing baton.

You begin your quest in a dense SPOOKY forest (the capitals are the author's, not mine). You have no idea where the Golden Baton is hidden, so you must begin by exploring your surroundings. As you do so, examine every object in every location and you should find some interesting clues. There are puzzles at every turn, but these are not hard and can usually be solved with a little thought and the right objects. Some solutions are a little obscure, but the game has a fairly good vocabulary, so just try everything you can think of. You will also encounter various nasties such as a savage wolf, a huge yellow crab, a knight in dark armour, a gorgon and an ugly lizard-man. (If you don't know what a gorgon is, then borrow a book on Greek mythology and read about Perseus and Medusa. I suspect that the knowledge you gain may also be helpful if you play Perseus and Andromeda at a later date.)

The game uses quite a deal of magic in different forms, e.g. wearing or otherwise using magic items and saying magic words. The HELP command will often give you hints when magic is required.

The Golden Baton suffers from a number of minor flaws in its storyline and its logical consistency, but no more so than other fantasy-based games such as Zork I and Adventureland. You must also remember that it was Brian Howarth's first attempt at an Adventure. Later titles in the series appear to be far more intriguing. All in all, I enjoyed playing it and could recommend it for beginning to intermediate Adventurers, especially if price or lack of a disk drive is a consideration.

Hints: As usual, look through the list of questions until you recognise the area where you're stuck. Match the numbers with the attached word list to get a hint. DON'T look ahead to questions referring to parts of the game that you haven't reached yet or you may spoil the game.

1) Can't climb the tree?
32 38 20

2) Can't see in the dark beneath the cabin floor?
54 38 13 50

3) Can't get past the wolf?
53 4 43

4) Can't cross the moat?
29 12 41 33

5) Can't open the portcullis?
18 1 4 45 43

6) Can't get past the knight in dark armour?
46 22 47

7) Can't unlock the huge door?
44 8 38 7 10 35 14 8 38 36

8) Can't get past the gorgon?
6 14 11 44 4 28

9) Still can't get past the gorgon?
52 40

10) Can't dry your matches?
42 38 7 25 18 21 16 25

11) Can't take the glowing quartz?
18 21 16 25 52 40 25

12) Can't read the runes?
42 38 34

13) Can't kill the lizard man?
18 21 55 43

14) Lamp out of fuel?
19 31 43 31 28 48 5 30 28

15) Can't get past the huge yellow crab?
52 40

16) Can't get the slugs?
51 26 23 49 2

17) Can't enter the lake?
37 24 3

18) Can't undo the padlock?
18 24 39 38 9 15

19) You're on the lake, but don't know what to do?
17 38 27 43

STOP PRESS: The Mysterious Adventures have now been taken over by Adventure International and should now be available again. More titles and a complete hint book are planned.

1	CLIMBING	11	PERSEUS	21	SOME	31	SOD	41	A	51	SALT
2	(PROVERB)	12	YOU'RE	22	YOURSELF	32	SEARCH	42	WEAR	52	SAY
3	SEAWORTHY	13	CASTLE	23	ALL	33	FISH	43	!	53	KILL
4	IT	14	DID	24	SOMETHING	34	HELMET	44	DO,	54	VISIT
5	SODDEN	15	CHAMBER	25		35	ALADDIN	45	INSTEAD	55	HYPNOSIS
6	HOW	16	MAGIC	26	SEASONS	36	LAMP	46	MAKE		
7	RING	17	READ	27	PARCHMENT	37	FIND	47	INVISIBLE		
8	UNTO	18	TRY	28	?	38	THE	48	OIL		
9	TORTURE	19	ROTTEN	29	PRETEND	39	FROM	49	THINGS		
10	AS	20	BRIARS	30	RAG	40	HELP	50	FIRST		

Book Reviews



COMPUTER ANIMATION PRIMER by David Fox & Mitchell Waite. Published by McGraw Hill

About 18 months ago BYTE magazine published a demo for the Atari called Waterfall and I was so impressed I searched immediately for the book from which it was taken. The book had not yet been published so I waited and waited. Now at last Computer Animation Primer by David Fox and Mitchell Waite has been published and it was well worth the wait.

Computer Animation Primer is a general look at the use of computers for animation but has the added bonus that the machine chosen to implement Computer Animation for the home user is the Atari. A glance at the facilities offered by the dedicated mainframes and other home computers shows why. The Atari is the only home computer that comes anywhere near to emulating the big ones. The author David Fox has an impressive background in animation and is a member of the Computer Games Project at Lucasfilm Ltd and was project leader for one of their first games for the Atari - Rescue on Fractalus.

The book is expensive at £19.95 but then so are a great deal of non-computer books nowadays but it is 500 pages long and contains plenty of hard information and routines that could advance your programming further than any other book you can find. The first part of the book, up to page 151, contains an overview of computer animation in general from the first steps up to the making of TRON and STAR WARS with good insights into how various effects are achieved. All different types of hardware and software are fully discussed before moving on to the possibility of animation on Personal Computers. Here the reason for the choice of the Atari as the subject of the second half of the book becomes apparent. Hardware features of Personal Computers are discussed. Hardware scrolling is said to be a rare feature found only on the more sophisticated computers. Colour registers are only just beginning to appear. Vertical Blank Interrupts are another rare feature as are Display List Interrupts. All of these have been a feature of the Atari from the very beginning. No wonder David Fox chooses it as the model for Home Computer animation!

From pages 153 onwards the book is devoted to Atari with each of the special features fully explored. Beginning with character sets it adds fascinating information to programming examples which guide you through each of the Atari's special features. Throughout the book are 'black box' routines which are machine language routines that you can use in your own programs without understanding the programming behind them. Just a few POKEs to certain locations will give you control over Player Missiles, fine scrolling, animation and more. In depth information, not previously easily available, is included such as the programming and data for the classic Atari demo of a running horse. If you have not seen this then type it in straight away, it really is impressive.

Animation through colour registers comes next, and this is where the Waterfall demo comes in, before going on to Player Missile Graphics with 'black-box' routines for full Player control and animation. Each feature is illustrated at the end of a chapter with examples of commercial programs which use the particular feature discussed so that you have a good idea of what can be achieved.

Fine scrolling comes next before the book builds up into 'The Great Movie Cartoon' which is quite simply the most stunning demo available from a listing that I have seen anywhere. It combines all of the features that have been been discussed into one *incredible* demonstration. An urban landscape scrolls by in the background. Trees in the middle distance scroll by *at a different rate* whilst in the foreground trucks and cars zoom by from left or right. Suddenly a human figure appears and walks across in the foreground of the scene! All of this can be contolled from the keyboard and can easily be adapted for a joystick. More importantly all of the information needed to construct this scene, and similar programs of your own, is there in the listing and in the 'black box' routines which you put to your own use.

The book is illustrated throughout with black and white photographs which are reproduced as a set of sixteen full colour pages towards the end of the book. There is a fair amount of white space as the text is set across only two thirds of the page but the book is larger than the normal paperback being 9¼" by 7¼". It is well produced and, as a welcome change for an American book, is extremely well written in an adult fashion.

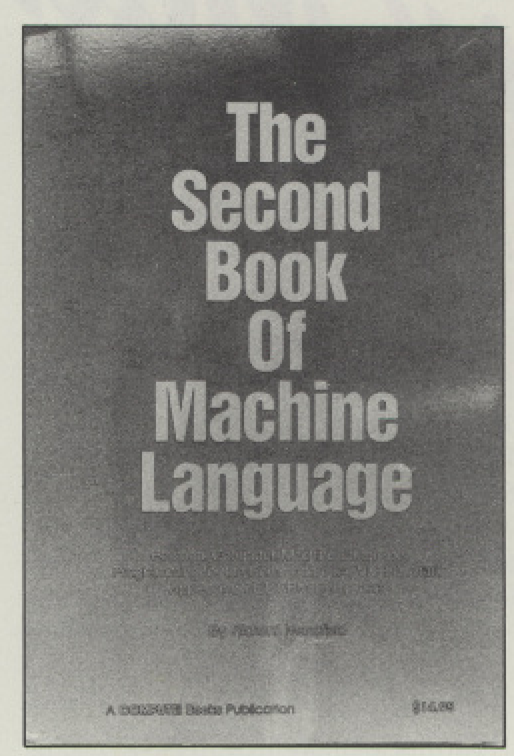
Eighteen months is a long time to wait for a book. £19.95 is a lot of money to pay. Is it worth it? Unreservedly, yes on both counts. It is a superb book which many Atari owners will overlook for Atari is not mentioned in the title and it may well be hard to find. If you can find it, do so.

COMPUTE!'s SECOND BOOK OF MACHINE LANGUAGE

by Richard Mansfield

One of the easiest to understand books for beginners to machine language is COMPUTE!'s Machine Language For Beginners which provides an excellent starting point for those who are proficient in BASIC. A problem when learning any new language is how to take the fundementals you have learned and put them into applications. This is precisely what COMPUTE's Second Book of Machine Language attempts to teach.

The book sets about explaining step by step how to create a long and complex program in machine language. Rather than choose a game or a business program which many users will not be interested in, the author has hit upon the master stroke of showing how to write a full Assembler which can then be used to write other programs. So, even when the book is finished, you will have a program which you can continue to use with all the concepts and practices you have learned.



The program is built up through the book stage by stage with full explanations of each stage. Every line in the program is explained, all the subroutines are picked apart and explained and all major routines are covered in depth. Starting with Equates and Definitions, it goes on to explain Data Base Management, I/O Management and Number Conversions, Input and Formatted Output, Data, Messages, Variables and more. The full source code of the Assembler is included and you will end up with probably the most comprehensively annotated machine code program available. More than that you will end up with a useful tool equivalent to a commercial assembler which may cost you over twice the price of the book.

The full 6502 Instruction Set is included as are notes on modifying the Assembler. Appendices explain how to use the program to assemble other programs, again on a step by step basis, and include the complete object code and a library of useful subroutines.

COMPUTE's Second Book of Machine Language is unique in its approach and should allow the novice machine code programmer to break away from the theory and begin writing substantial programs of his own. The book covers a number of 6502 based machines but all the routines are translated for the Atari. An additional advantage is that the reader should get a good insight into how to translate programs from other machines.

GETTING STARTED WITH THE ATARI 600XL

by Peter Goode. Phoenix Publishing Associates.

Including 600XL in the title is an unfortunate choice, for the 600XL has almost disappeared without trace. Still the 800XL uses the same Operating System and Basic so is this book a good one for a new XL owner?

Well, if you just want to get started it will probably do but if, having started, you want to go further you may well regret its purchase. It starts with very simple use of BASIC such as printing to the screen and using variables before going into Graphics and Sound. Graphics are covered in half a dozen or so pages of simple PLOT and DRAWTO before the heading 'ADVANCED GRAPHICS' suddenly appears. Advanced Graphics are said to require the use of machine code which is simply not true. The chapter says 'These advanced graphics facilities, often called Player Missile graphics are used extensively with machine code in THE 600XL PROGRAM BOOK. From which the following is an example'. There then follows a program which contains *no machine code whatsoever* and *no Player Missile graphics!*

Oh, dear! To be fair, other simpler Basic programming is covered later in the book but there is a tendancy to introduce program listings for explanation which contain many concepts which a beginner might find hard to grasp.

The book will no doubt get you started but in which direction it will lead you I am not sure. £5.95 is not a bad price at todays costs but be warned that you will certainly need to buy other books once you have 'got started'.

Other books received for review...

EXPLORING ADVENTURES on the Atari 48K

by Peter Gerrard. Duckworth Publishing. 246pp. £6.95

Although adapted from books for other micros, this would seem to be an ideal introduction to Adventuring on the Atari. Two complete adventure listings are included as well as lots of help for you to write your own.

THE MICRO ENQUIRER - ATARI XL

by Christopher Bidmead and Benjamin Woolley. Century Communications Ltd. 183 pp. £8.95

A large format book on micro-computing in general with specific sections inserted in the text for the Atari. An ideal introduction for someone new to computing giving a far wider general understanding than a book dedicated to a particular machine.

THE ATARI XL HANDBOOK

by Lupton & Robinson. Century Communications Ltd. 245 pp. £5.95

A book to take you through the XL from setting up to writing reasonably complex programs. Several appendices.

More detailed reviews of some of these books will appear in future issues.

The New Machines

Four models based around the 800XL in a re-styled case with a new keyboard and re-sited 'function' keys making a more compact unit. The inside has been redesigned for economy of production using fewer chips and moving parts giving a smoother running and faster computer.

XE

65XE

The basic model in the range is much the same as the 800XL. As far as is known there are no improvements except for the addition of the graphics symbols on the keyboard. The peripheral bus on the 800XL has now however been dropped.

65XEM

The basic 65XE with added full music synthesiser features which can be hooked up to a hi-fi system. Eight voices giving rich music giving the following features.

Digital sample rate in excess of 30kHz.
Over 60dB dynamic range.
Fundemental Frequency Range of 4.8 Hz to 7.8 kHz - 10 2/3 octaves.
Fundemental Frequency Resolution of 1/64 semitones.
Precise control of harmonic amplitudes.
64 harmonics.

No news of a music keyboard for this although one would assume that a keyboard can be interfaced to the computer.

130XE

128k of memory in two 64k switchable blocks allowing something like 48k of user RAM and 64k of storage which can be instantly interchanged with the RAM in use. The ideal application is for word processing and databases but there may well be adaptations of multiple disk adventures and the like from third party software producers.

65XEP

The whole lot in one. The basic 65XE with built in (added?) 5" monochrome monitor and 3½" disk drive to enable you to keep computing wherever you are. No details are available yet on size but it may not be quite so compact as other 'lapheld' models.

COMPATABILITY

All XE models are 100% compatible with the 400, 800, 600XL and 800XL meaning that the majority of existing software and all peripherals will run on the new models and software developed for the 65XE will run on the older models.

All the new peripherals for the XE range are compatible with the 400, 800, 600XL and 800XL.

AVAILABILITY

At the time of writing Atari Corp. (U.K.) had not decided which items would be made available and at what prices. Certain peripherals may not make it over here (can the market really support seven printers?).

XE SOFTWARE

ATARIWRITER+ is an enhanced version of the existing program with built-in proof reader (American spellings?).
INFINITY, which has received rave reviews from those who saw it at CES, is an integrated spreadsheet, word processor and relational database all on one disk. The program uses windows and has "incredible graphics hitherto thought only possible on 16-bit machines".. One report says that it puts to shame anything available for the Mackintosh including programs like Lotus 1-2-3.
SILENT BUTLER. A domestic accounts program.

Also... ATARI PROOFREADER... MUSIC PAINTER ... TRACK AND FIELD ... CRYSTAL CASTLES and MARIO BROS.

DISK DRIVE

The basic disk drive for the XE range will continue to be the 1050 5¼" floppy disk drive although the casing may be re-styled to match the new designs.

MONITORS

A 14" composite colour monitor and a 12" monochrome, 80 column monitor have been anounced. Does this mean that software is being developed for the XE range to allow true 80 column applications?

PRINTERS

XTM201 thermal dot-matrix running at 20 cps. XTC201 thermal dot-matrix *in colour*. XDM 121 Daisy Wheel letter quality at 12cps and the XMM801 dot-matrix at 80cps.

Much will depend on the price of these for Atari has never produced a printer to equal those available from dedicated manufacturers but if the prices are *low* then these may well succeed where previous models have failed.

PRICES

U.S. prices are reported as $120 for the 65XE, $160 for the 65XEM, $200 for the 130XE and $400 for the 65XEP. Printers are said to be from as low as $50 up to $200.

COLOUR CODING

Both new ranges will be 'colour coded' with all boxes for the XE range and peripherals in red and the ST range in blue so that the consumer will know whether a particular peripheral is suited to his machine. Why? Because Atari will continue to sell through multiple stores and recognises that very few store staff will have sufficient knowledge of the product. Support will be given to stores in the form of charts and reference guides but the onus will be on the consumer to display more knowledge than the salesman. A shrewd move with greater benefit than might at first be thought.

ST

The ST range is destined to break new ground for personal computers bringing an amazing 16-bit machine into the grasp of almost any individual.



There are two models which differ only in the amount of RAM. The 130ST has 128k of RAM and the 520ST has 512k. Both have an additional 192k ROM Operating System which includes the GEM applications package. The ROM is expandable to 320k with a plug in cartridge although it has not been disclosed what this add-on will contain.

GRAPHICS

Incredible colour graphics on a 32k bit-mapped screen with 3 Graphics modes.

Low Resolution - 320 x 200 pixels (equivalent to Graphics 8) *in 16 colours.*

Medium Resolution - 640 x 200 pixels in 4 colours.

High Resolution - 640 x 400 pixels in monochrome.

512 colours are available and as the computer has interrupts, these can presumably be mixed outside of the standard Graphics modes.

INTERFACES

Built-in interfaces include a high-speed hard disk interface, integrated floppy disk controller, Centronics parallel interface, RS232C serial modem interface, two joystick ports with one configured for use with a mouse and MIDI music interface.

Four video ports are provided for standard television, low resolution composite video, medium resolution RGB and high resolution monochrome. A suitable monitor will of course be required to operate all 3 graphics modes but the basic computer can be run in Low-Resolution mode on a standard TV.

LANGUAGE

The ST machines will feature an "enhanced" ATARI BASIC or be available with LOGO as an option.

PRICES

Up to now you could expect to pay in excess of £2,000 for a good 16-bit system but the 130ST is to retail at $399 and the 520ST at $599. A full system incuding 3½" disk drive and monitor is expected to be available for around £700 - £800.

SOUND & MUSIC

Proving that these are not just business machines but all-round entertainment and serious computers (for the first time in one machine), there are 3 sound channels with wave shaping sound, seperate frequency and volume control, dynamic enevlope controls and frequency from 30Hz to above audible range. The MIDI interface will allow connection to external keyboards and synthesisers.

OPERATING SYSTEM

The Operating System is TOS™ developed jointly with Digital Research to enable the best use of the GEM software. GEM is very similar to Apple's LISA and the Mackintosh and features windows, drop down menus, icons, a calculator and clock all of which can be controlled by a mouse. For those who don't know about a mouse, it is a hand controlled device which is run over a smooth surface and moves a pointer about the screen. Incredibly easy to use, it allows full control over the screen and applications without having to look away from the screen. The GEM system has been extensively reviewed in Personal Computer World magazine February 1985 and elsewhere for those who require further in-depth details. It is a very powerful system that is implemeted on several major (expensive) machines in monochrome. The ST brings you the GEM system in full colour for the first time.

INSIDE

The computer is run by a 16/32-bit Motorola 68000 microprocessor with 8 32-bit data registers, 8 32-bit address registers, 16-bit data bus, 24-bit address bus, 7 levels of interrupts, 56 instructions, 14 addressing modes and 5 data types.

PERIPHERALS

SF354 3½" disk drive with 500k storage.

SH317 3½" hard disk drive with 10MB storage.

SM124 12" monochrome high-resolution monitor.
SC1224 12" RGB monitor.

ST504 thermal dot-matrix in colour.
SDM124 daisy wheel letter quality.
SMM804 impact dot-matrix.

Prices are not yet available for these but have been reported as starting from an incredible $100 for the 3½" disk drive.

ST SOFTWARE

There is none at present although the GEM system allows easy adaption of any software package to any machine running GEM. Take a look at any software running on most 16-bit machines such as Wordstar, Lotus 1-2-3 etc. and it should be relatively easy to convert it to the ST. All Atari have to do is persuade the Software houses that the ST is worth writing for and this should not be too difficult. In the past, development of software for a particular 16-bit machine has been costly and Atari might not have been able to persuade producers to take the risk. Now with over 75 computer manufacturers licensing GEM for their machines and nearly all of the major software producers interested, software should become available quite quickly.

The major problem might be price for many business packages cost £400 - £500 at present, which is not too bad when you have paid £2500 for the computer, but will ST owners be willing to pay more than the cost of the machine to get *one* software package?

BASIC ANIMATION

by Brian Williams

One of the most appealing and powerful features of a home computer is the ability to move shapes around the screen - animation. Atari owners have at their finger tips a superb graphics machine with many powerful features. Some are more difficult to understand but even a complete beginner can obtain some very pleasing results by character set manipulation.

You have already used the character set. It consists of the letters and numbers and control characters that you see when you type anything from the keyboard. Each character is made up of eight lines and each line is eight bits wide, so every character is made up of an 8 x 8 grid. If you typed the letter T and could magnify the screen you would see the squares illuminated as in figure 1.

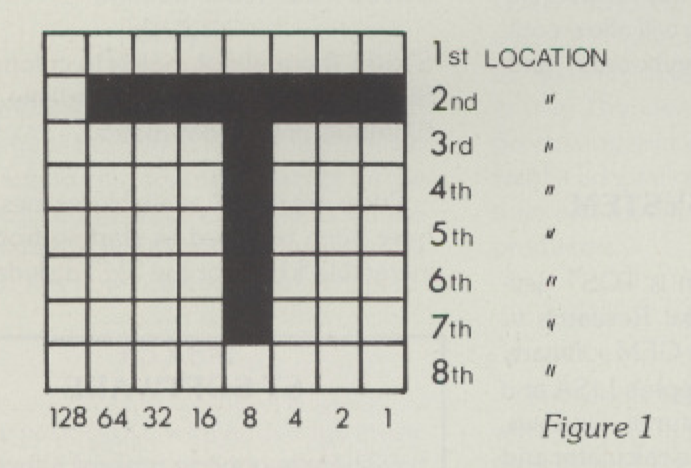
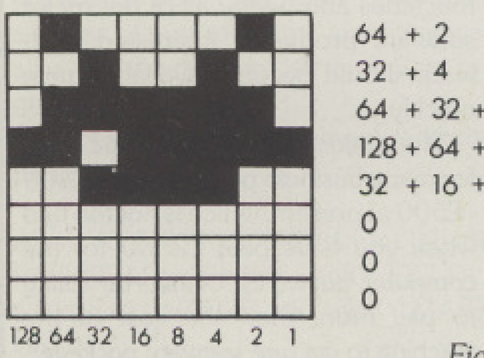


Figure 1

Each character is made up of a box containing 64 squares. All or none or any combination of these squares can be filled in to make a shape. If we filled them all in, we would get a solid square box. If we left them all empty we would get a blank space. If you look again at figure 1 you will see the figures 128 to 1 along the bottom. Without getting too technical, these are the decimal codes for each bit value. So, how do we use these to create a shape?

First we draw our shape onto an 8 x 8 grid until it looks about right. Lets start with a primitive looking space ship. Take a look at Figure 2. If you look along the first line, or location, there are two squares filled in, one in the '64' column and one in the '2' column. If you add these together (64+2=66) and then POKE the result into the first location of a character, the computer will know which squares to fill in. Continue doing this until each of the eight lines have been added up. We now have all the information to store a character in a DATA statement which would look like this

DATA 66,36,126,223,60,0,0,0



64 + 2 = 66
32 + 4 = 36
64 + 32 + 16 + 8 + 4 + 2 = 126
128 + 64 + 16 + 8 + 4 + 2 + 1 = 223
32 + 16 + 8 + 4 = 60
0 = 0
0 = 0
0 = 0

Figure 2

Let's recap. It takes eight memory locations to store the data or information for one character so all we have to do is store different numbers and 'Hey-Presto!', we have a new re-defined character. Well, almost but not quite!

The character set is stored in ROM (Read Only Memory) which we can't change so our first task is to copy the the character set to a location in RAM (Random Access Memory) where we can change it in whatever way we wish. Now we come to a problem which you may not have dealt with before, memory management. You have to decide where to store the character set we are going to copy from ROM. A full character set requires 1024 locations since there are 128 characters and each requires 8 locations (128 x 8 = 1024 or 1k), so we need to set aside an area of memory for this purpose. Memory is divided into 'page's, each of which is 256 bytes, or locations, long. We have to find a suitable page number and we will then POKE this number into the Character Base Register (location 756) which tells the computer where the character set to be used is stored. If you now take a look at the program, you will see that lines 10, 50 and 150 have the number 120 which is the page number we have chosen to store our new character set. If you have a 16k machine you will have to use a lower number such as 48 but whatever number you use it must appear on ALL three lines. Before going any further make sure that you understand what you have read so far. How to draw your own characters and change them into numbers that the computer can understand. If you have an idea of the principles involved, then continue, but if you are unsure go back and read it again. Although it is a lengthy process, the principles are fairly simple.

You will now need a chart to show you the order in which characters are stored in the character set. As the chart is quite lengthy we do not have room to reproduce it here but the references at the end of the article will give you further information. If you want to make up your own chart you can use Listing 2.

Look at line 20 of Listing 1 and you will see that I have assigned a value of 64 to X. This is changed from 64

```
DY 1 REM
DN 2 REM        BASICS OF ANIMATION
BM 3 REM        BY BRIAN WILLIAMS
FG 4 REM
TV 5 ? "KCOPYING CHARACTER SET - PLEASE W
   AIT"
WL 9 REM PEEK AT THE CHARACTER SET IN
         ROM AND COPY IT TO PAGE 120
TH 10 FOR I=0 TO 1023:POKE 120*256+I,PEEK
   (224*256+I):NEXT I
FB 19 REM CHANGE CHARACTERS 64 TO 71
JB 20 X=64
OM 30 FOR LOOP=1 TO 8
LL 40 FOR I=0 TO 7:READ A
MA 50 POKE 120*256+X*8+I,A
LE 60 NEXT I:X=X+1:NEXT LOOP
JV 69 REM DATA FOR NEW CHARACTERS
DI 70 DATA 2,4,4,4,5,3,1,6
DM 80 DATA 64,32,32,32,160,224,128,96
QF 90 DATA 0,0,112,8,5,3,1,6
SZ 100 DATA 0,0,14,16,160,192,128,96
NN 110 DATA 0,0,0,61,195,1,6,0
YG 120 DATA 0,0,0,188,195,128,96,0
XZ 130 DATA 0,0,0,1,15,17,38,64
GA 140 DATA 0,0,0,128,240,136,100,2
WC 150 POKE 756,120:? CHR$(125):POKE 752,
   1:REM POKE CHARBASE REG. WITH PAGE NO.
   :CLEAR SCREEN:TURN OFF CURSOR
OO 160 X=2:Y=8:A=10:Z=1:REM SET START POS
   ITION AND SOUND VALUE
JZ 170 POKE 710,30:POKE 709,4:REM BACKGRO
   UND COLOUR AND LUMINANCE OF CHARACTERS
LI 179 REM PRINT ON SCREEN AND ANIMATE
MZ 180 POSITION X+2,Y:? "♥⊢":FOR DE=1 TO
   40:NEXT DE
TH 185 POSITION X+2,Y:? "  ":X=X+Z:Y=Y+Z
QR 190 POSITION X+2,Y:? " μ":FOR DE=1 TO
   40:NEXT DE
TJ 195 POSITION X+2,Y:? "  ":X=X+Z:Y=Y+Z
LV 200 POSITION X+2,Y:? "┥┐":GOSUB 1000:P
   OSITION X+2,Y:? "  ":X=X+Z
XI 210 POSITION X+2,Y:? "/\":FOR DE=1 TO
   40:NEXT DE
TG 215 POSITION X+2,Y:? "  ":X=X+Z
BI 220 IF X=34 OR X=2 OR Y=22 OR Y=2 THEN
    Z=-Z
OX 230 GOTO 180
PX 999 REM SOUND SUBROUTINE
XT 1000 A=A+Z:SOUND 0,A,10,10:RETURN
```

Listing 1

through to 71 with the loop in line 30, so I am changing characters 64 to 71 of the character set which are the first 8 CONTROL characters. You are not restricted to these as you can choose any or all of the 128 characters, just specify the character number in line 50 (the value of X). Be warned though, if you change any letters or numbers , you cannot use those letters or numbers on the screen. If for example you had re-defined the letter A to a space ship and then wanted to print ATTACK, you would get little space ships instead of the A's!. It is best to stick to re-defining little used characters to allow mixing of text and your own characters on screen.

Listing 1 shows how to POKE your new DATA into the character set so study it well before we go on to try some animation. Got it? Right now let's see how we can do some animation.

We can quite easily move any of the standard characters around. We could even make the letter A do triple somersaults, but it doesn't look that good so what I've done in Listing 1 is to use two characters to make a larger one. The DATA in line 70 changes the CTRL-COMMA character into the left side of a bird and the DATA in line 80 changes CTRL-A into the right hand side. Now if you PRINT them side by side, you will get a bird which is actually two characters wide. You can see that by using this method any number of intricate shapes can be designed, with each character being part of a larger shape. You are restricted only by your own imagination.

If the shapes are going to be static, for example trees, buildings etc, you can use as many characters as you like, but if you are going to move shapes around, spaceships, monsters etc, then it is best to stick to between 1 and 6 characters as the more characters there are to move, the slower the object will move about. One character will move quite fast but a monster made up of 8 characters will be rather sluggish. Going back to the program, lines 90 to 140 each alter the shape of the bird slightly and when printed alternately give quite a good impression of flight. Lines 160 to 230 move the bird by PRINTing the first two characters, then erasing them and then printing the next two one space further on. These lines could quite easily be converted to work with a joystick. Line 1000 is just there to provide a little sound.

There are many refinements to character set animation such as protecting your character set and using other Graphics modes but you now have the basics, so fill the screen and have some fun! ●

```
SG 5 ? "K      CHARACTER CODE GENERATOR
                  by Les Ellingham"
NN 10 POKE 766,1:POKE 752,1:POKE 84,3
RA 50 FOR I=0 TO 127
NY 60 A=I+32*(I<64)-64*(I>63 AND I<96)
DW 70 IF I/20=INT(I/20) THEN COL=I/4+1*(I
   >123):POKE 84,3
AV 80 POKE 85,COL+2+1*(I>119 OR I<10):? I
   ;" ";CHR$(A);"|"
IX 90 NEXT I
LG 100 GOTO 100
```

Listing 2

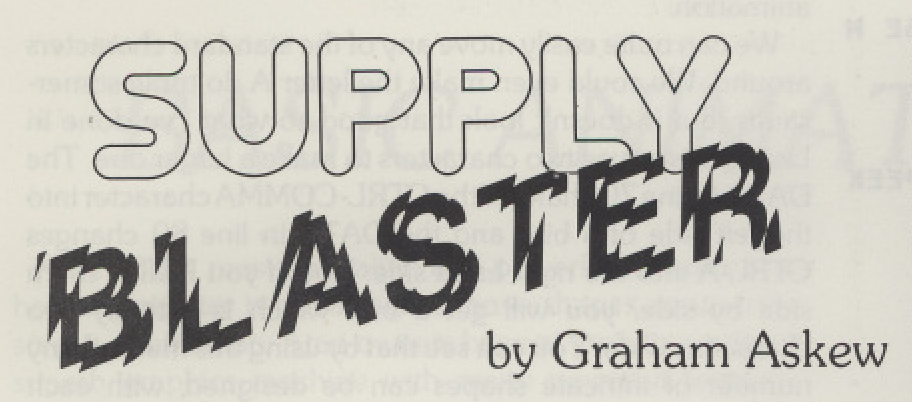
References:

Internal Character Charts

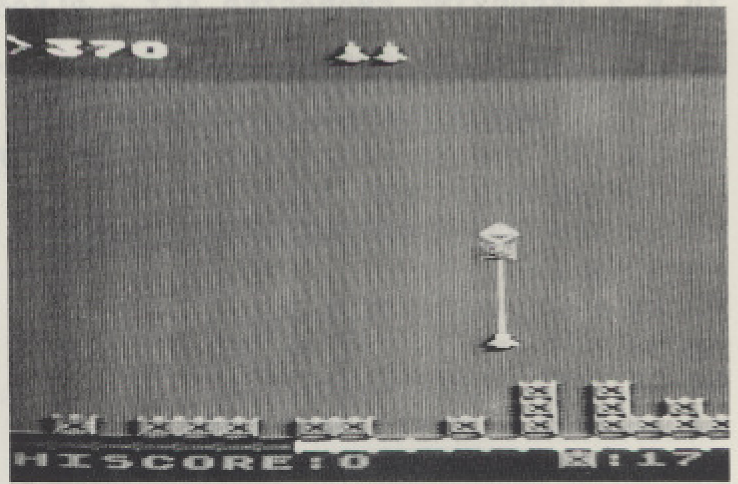
ATARI BASIC Reference Manual. Page 55
YOUR ATARI COMPUTER (Osborne/McGraw Hill). Pages 294 & 417
COMPUTE!'s THIRD BOOK OF ATARI (the most comprehensive reference).

Redefining and Animating Characters

COMPUTE!'s FIRST BOOK OF ATARI GRAPHICS
COMPUTE!'s SECOND BOOK OF ATARI GRAPHICS



by Graham Askew



Supply Blaster is an arcade-type game for 1 or 2 players. It is written in BASIC and uses redefined characters in Graphics 17 with a machine code transfer of half a character set from ROM to RAM and machine code Display List Interrupts (D.L.I.'s) which, among other things, splits the background into dark blue cloud level, lighter blue open sky and ground.

Initially there are choices of the number of players and of the limit of supplies which must be prevented from landing and remaining intact on the ground. A player's game ends either when he has lost all his ships or when the preselected number of supplies is on the ground.

A player starts with three ships and the number of ships left at any given time, including the one currently in play, is shown at the top middle of the screen. Player 1's score is indicated at the top left and, if playing, Player 2's score at the top right. A high-score stands at the bottom left and the number of supplies landed and still intact is at the bottom right.

A new ship is set up on the ground to the extreme left and the object of the game is to score as many points as possible by moving the ship, with a joystick, in any horizontal or vertical direction and preventing supplies, which drop from random points at cloud level, from landing on the ground and building up to the preselected number. This is done by positioning the ship under a descending box and firing up at it by pressing the joystick button. The Player's score is increased for each supply box hit with the number of points increasing proportionately to both the height of the box when hit and the height of the Player's ship.

A fuel line is built in just below ground level and this runs out by a 20th each time a shot is fired. When the last shot has been used an alarm sounds and a flashing arrow at the extreme left of the fuel line indicates that the Player must return his ship to the starting point in order to re-arm and be able to carry on with the battle. This operation needs to be performed as rapidly as possible because supplies are still falling and, if the Players ship is not available and armed, they will of course land!

Just to make life a little more difficult, random enemy missiles appear from either side of the screen above certain scores, vertically level with the Player's ship. These will automatically readjust their aim to any change in the Player's vertical position and the only way to avoid being hit and destroyed is to move down behind one or more landed supply boxes so that the missile impacts with one of those instead. It will be seen that it is not a bad idea to let a few boxes land, especially near the edges of the screen.

A second obstacle presents itself, depending on the supplies limit selected, when an occasional enemy ship appears from either side of the screen at varying heights. These chase across the screen towards the horizontal position of a Player's ship, and if the Player does not shoot quickly enough, they will fire a laser beam which will destroy the Player's ship. As the game progresses, these become more difficult to hit as they first begin to dodge the Players's line of fire and then later combine this strategy with that of coming down the screen towards him.

Thirdly, after the loss of a ship and providing a Player has passed a certain score depending on the level of play, the cloud level drops, thereby making it more difficult to cover the width of the screen to hit supply boxes which drop from a lower position.

Just to be fair, guided missiles and enemy ships will not be launched whilst the player's ship is in the left-hand column of the screen, which obviously includes the re-armimg process, but remember, it is no good staying there for too long because further supplies cannot be prevented from landing in the main play area. A missile will, however, continue on its way if already launched from the right hand side of the screen. An enemy ship, if already on screen , will still align itself above the Player's ship and fire at him, unless he has commenced re-arming, in which case it will hover until he is re-armed, then it is matter of who can fire first!

The preselected last supply box trying to land is indicated by a different colour and warning sound as it descends.

If you fancy your chances of going up the screen to meet or even pass an enemy ship, just try it!

SCORING:

Points are scored for shooting a supply box.

A players score is also increased by 250 points for each enemy ship destroyed.

An extra ship is credited at a score of 10,000 points or more.

Ships can be lost by

Being hit by descending supplies
Being hit by enemy missiles.
Being shot or hit by enemy ships

VARIABLES

L(	positions of each Player's intact landed supplies.
S(	Player(s) score(s).
D(	number of each Player's supplies down on the ground.
X(	checks for extra ships.
G(	number of each Player's ships left.
CL(	Each player's current cloud level.
N	Number of players.
X	Horizontal position of player's ship.
Y	Vertical position of player's ship.
X1	difference in player's ship's horizontal movement.
Y1	difference in player's ship's vertical movement.
E	fuel level.
R	re-fuelling (re-arming) level.
EO	selection of enemy object type.
T	type of enemy objest subroutine line.
H	high score.
P	Player (0 for Player 1, 1 for Player 2).
S	joystick.
J	random selection of enemy hor. position.
K	random selection of enemy vert. position.
B	colour of enemy supply box or initial colour of enemy ship.
BO	normal supply box character/colour.
F	character/colour of Player's ship shot.
DI	difference in hor. direction of enemy missile/ship.
M	character/colour of enemy missile.
W	waiting factor before enemy ship fires
Z	character/colour of enemy ship's laser beam.
A	factor to synchronise refuelling alarm or sound of refuelling operation with explosion of landed supplies if supplies hit by an incoming missile at the same time.
S4	Setcolor 4 memory location 712.
NC	normal colour of sky.
V0	Voice 0 distortion/volume memory location.
V1	Voice 1 distortion/volume memory location.
V2	Voice 2 distortion/volume memory location.
V3	Voice 3 distortion/volume memory location.
FL	extreme left fuel line memory location.
SK	DLI machine code location for sky colour.
SL	Supplies limit selected.
SP	top left screen memory location.
SC	Antic enable/disable location 559

```
EI 1 REM ******************************
HN 2 REM *      SUPPLY  BLASTER       *
LR 3 REM *            by              *
TB 4 REM *                            *
TR 5 REM *       GRAHAM ASKEW         *
EN 6 REM ******************************
ZP 10 D=10:V=20:S4=712:NC=112:GOSUB 1000
NR 20 IF E=0 AND R=19 THEN GOSUB 700
ZN 30 IF E=0 AND T<>H3 AND X=0 AND Y=21 T
   HEN GOSUB 550:IF R<19 THEN 90
WF 40 S=PEEK(632+P):IF S<>14 OR Y=CL(P)-4
    THEN POKE V0,0
QC 50 X1=(S=7 AND X<19)-(S=11 AND X):Y1=(
   S=13)-(S=14 AND Y>CL(P)-4)
DD 60 IF X1<>Y1 AND Y+Y1<L(X+X1,P) THEN C
   OLOR 0:PLOT X,Y:X=X+X1:Y=Y+Y1
EV 70 COLOR 165:PLOT X,Y:IF Y1<0 THEN COL
   OR 3:PLOT X,Y+1:SOUND 0,5,0,D:COLOR 0:
   PLOT X,Y+1
ZT 80 IF PEEK(644+P)=0 AND E AND Y>CL(P)-
   4 THEN F=4:GOSUB H1
CW 90 IF T=0 THEN EO=INT(RND(0)*D+1):IF (
   X AND EO>7) OR EO<8 THEN B=0:GOSUB 800
   +(EO>7)*EO
RT 95 IF T THEN COLOR 0:GOSUB T:IF T=0 OR
    T=H3 OR B=129 THEN POKE V3,0
ML 96 GOTO V
JD 100 IF X=J AND Y=K+1 THEN RETURN
CB 110 SOUND 2,L,8,D
NM 120 COLOR F:PLOT X,Y-1:IF F AND T AND
   X=J AND K<Y THEN DRAWTO J,K+1:POKE V0,
   0:POKE V3,0:GOTO 160
DE 130 DRAWTO X,CL(P)-4:IF F THEN F=0:GOT
   O 120
ER 150 E=E-1:POKE FL+E,73:POKE V2,0:RETUR
   N
UZ 160 COLOR 0:PLOT X,Y-1:DRAWTO J,K+1:EX
   =43:IF K>1 THEN PLOT J,K-1
GD 164 FOR Q=15 TO 0 STEP -1:EX=(EX+1)*(E
   X AND EX<47):IF Q>5 THEN POKE SK,114
XK 166 COLOR EX:PLOT J,K:SOUND 2,D,0,Q:PO
   KE SK,NC
TK 170 FOR Z=1 TO Q:NEXT Z:NEXT Q:S(P)=S(
   P)+(T=H2)*(41-K-Y)*D+(EO=D)*250:POSITI
   ON P*13+1,0:? #6;S(P):T=0
CA 180 IF S(P)>=10000 AND X(P) THEN G(P)=
   G(P)+1:FOR I=1 TO 25:POKE G(P),0:SOUND
    2,L,12,D:POKE G(P),133:NEXT I:X(P)=0
OB 190 GOTO 150
JA 200 IF B>BO THEN SOUND 3,L,D,D
ZO 220 IF K<L(J,P) THEN K=K+1:COLOR B:PLO
   T J,K:IF K>CL(P)-4 THEN COLOR 8:PLOT J
   ,K-1:COLOR 0:PLOT J,K-2
NO 230 IF X=J AND (K=Y OR K=Y-1) THEN COL
   OR 0:GOTO 500
YG 240 IF K=L(J,P)-1 THEN SOUND 3,H2,8,D:
   PLOT J,K-1:T=0:L(J,P)=L(J,P)-1:D(P)=D(
   P)+1:POSITION 16,23:? #6;D(P)
AM 250 IF D(P)=SL THEN 900
ZK 260 RETURN
PO 300 IF J>-1 AND J<V THEN PLOT J,K
OC 310 J=J+DI:K=Y:LOCATE J,K,Z:IF Z<BO AN
   D J<>X+DI THEN SOUND 3,L,12,D:COLOR M:
   PLOT J,K:RETURN
JF 320 IF Z=BO THEN 340
TH 330 POKE V2,0:GOTO 510
VS 340 K=K-(K>L(J,P) AND K=L(J-DI,P)):Q=1
   :POKE V0,0:C=0:FOR I=1 TO L:C=(C=0)*34
   :COLOR C:PLOT J,K:POKE SK,114
IR 350 SOUND 3,I,0,D:Q=Q+(E=0 AND Q):IF Q
   =5 THEN Q=1:GOSUB 700
HX 360 POKE SK,NC:NEXT I:POKE V3,0:T=0
LI 370 K=K-1:IF K>=L(J,P) THEN COLOR BO:P
   LOT J,K+1:COLOR 0:PLOT J,K:GOTO 370
RA 380 L(J,P)=L(J,P)+1:D(P)=D(P)-1:POSITI
   ON 16,23:? #6;D(P);" ":RETURN
ZD 400 IF J<2 OR J>17 OR ABS(J-X)>1 OR K>
   Y-3 THEN 410
KN 405 DI=INT(RND(0)*3)-1:PLOT J,K:K=K+(K
   +2<L(J,P))*(S(P)>SL*H3):GOTO 420
NF 410 DI=SGN(X-J):IF J>-1 AND J<V THEN P
   LOT J,K
NF 420 J=J+DI:FOR C=D TO 42 STEP 32:COLOR
    C:PLOT J,K:SOUND 3,C+L,D,D:NEXT C
ME 430 W=W+(J=X AND R=19):IF W=3 THEN Z=3
   6:SOUND 3,H1,12,D:GOTO 450
ZI 440 RETURN
GJ 450 COLOR Z:DI=(Y>K+1)-(Y<K-1):IF DI T
   HEN PLOT J,K+DI:DRAWTO J,Y-DI
MD 460 IF Y=K OR Z=0 THEN POKE SK,116:GOT
   O 510
```

→

```
NT 480 FOR I=1 TO H2:NEXT I:Z=0:POKE SK,NC:GOTO 450
SC 500 PLOT J,K:IF K>2 THEN PLOT J,K-1
BS 510 C=5:FOR Q=14 TO 0 STEP -1:SOUND 0,H1,0,Q:SOUND 1,101,0,Q:SOUND 2,102,0,Q:SOUND 3,L,0,Q
NV 520 FOR I=0 TO D:POKE SK,116:C=5*(C=0):COLOR C:PLOT X,Y:NEXT I:POKE SK,NC:NEXT Q
CJ 530 POKE G(P),0:G(P)=G(P)-1:IF G(P)=SP+7 THEN PLOT J,K:POSITION 1,6:? #6;"YOU ARE DESTROYED":GOTO 920
QM 540 GOTO 940
GT 550 POKE FL,75:POKE FL+R,201:SOUND 2,R+H1,D,D:R=R-1:IF R=-1 THEN R=19:E=V:A=0:POKE V2,0
ZN 560 RETURN
YF 700 POKE FL,(A<3)*75+(A>2)*73:SOUND 2,(A<3)*H1+(A>2)*L,D,D:A=A+1-(A=5)*6:RETURN
HF 800 J=INT(RND(0)*18+1):K=CL(P)-5:T=H2*(L(J,P)>17):B=B0+(D(P)=SL-1)*96:SOUND 3,D,8,(T=H2):POKE 77,0:RETURN
MF 808 IF S(P)>999 THEN T=H3:J=-1:M=6:DI=1:RETURN
DQ 809 IF S(P)>2999 THEN T=H3:J=V:M=7:DI=-1:RETURN
WD 810 IF S(P)>SL*H1 THEN J=INT(RND(0)*2)*21-1:K=INT(RND(0)*6+CL(P)-4):M=0:T=410-(S(P)>SL*H2)*D
ZI 820 RETURN
VG 900 FOR Q=0 TO 3:POKE V0+Q*2,0:NEXT Q:FOR Z=1 TO D:FOR I=1 TO 129 STEP 128:COLOR I:PLOT J,K:NEXT I:NEXT Z
IW 910 POSITION 2,6:? #6;"SUPPLIES  LANDED":G(P)=SP+7
ML 920 POSITION 5,D:? #6;"game  over":IF N=2 THEN POSITION 6,14:? #6;"PLAYER ";CHR$(177+P)
TR 925 GOSUB 1500
HW 930 IF N=1 OR G(0)=G(1) THEN FOR Q=0 TO 1:H=(S(Q)>H)*S(Q)+(S(Q)<=H)*H:NEXT Q:POSITION 8,23:? #6;H:GOTO 1110
MF 940 CL(P)=CL(P)+2*(S(P)>SL*CL(P)*CL(P)*5):P=P+(N=2 AND P=0 AND G(1)>SP+7)-(P AND G(0)>SP+7):POKE 54,NC:GOTO 1170
LB 1000 GRAPHICS 17:POKE 708,90:POKE 709,14:POKE 710,24:POKE 711,V:POKE 54,NC:POSITION 3,6:? #6;"SUPPLY BLASTER"
HR 1010 POSITION 2,D:? #6;"by  graham askew":POSITION 6,14:? #6;"(C)1984":DIM ML$(32),L(19,1),S(1),D(1),X(1),G(1)
JR 1015 DIM CL(1):O=0:B0=33:L=50:H1=100:H2=200:H3=300:SC=559:SK=1554:V0=53761:V1=V0+2:V2=V1+2:V3=V2+2
BM 1020 S=(PEEK(106)-6)*256:FOR I=1 TO 32:READ A:ML$(I)=CHR$(A):NEXT I:X=USR(ADR(ML$),57344,S)
QF 1030 DATA 104,104,133,204,104,133,203,104,133,206,104,133,205,162,2,160,0,177,203,145,205,136,208,249,230,204,230
KE 1040 DATA 206,202,208,240,96
IL 1050 FOR I=S+8 TO S+127:READ A:POKE I,A:NEXT I:POKE S+131,102:POKE S+132,102:POKE 756,S/256
AO 1060 DATA 153,255,219,231,231,219,255,129,142,49,66,156,67,152,4,97,8,20,42,65,20,0,34,0,8,8,8,8,8,8,8,8
PI 1070 DATA 8,8,28,28,28,62,127,28,128,192,60,63,60,192,128,0,1,3,60,252,60,3,1,0,24,60,126,255,129,66,36,24
CI 1080 DATA 0,0,0,129,255,255,129,0,28,28,42,127,62,28,8,8,8,28,62,137,255,255,129,0
DZ 1085 DATA 0,42,28,62,62,28,42,0,0,0,8,28,28,8,0,0,0,34,20,0,0,20,34,0,65,0,0,0,0,0,0,65
JJ 1090 FOR I=0 TO 47:READ A:POKE 1536+I,A:NEXT I:DL=PEEK(560)+256*PEEK(561)
HC 1091 POKE DL+3,198:POKE DL+26,134
AA 1094 DATA 72,169,182,141,10,212,141,22,208,169,16,141,0,2,104,64
XB 1095 DATA 72,169,112,141,10,212,141,26,208,169,32,141,0,2,104,64
DH 1096 DATA 72,169,162,141,10,212,141,26,208,169,0,141,0,2,104,64
VE 1100 N=1:SL=L:SP=PEEK(88)+256*PEEK(89):FL=SP+440:GOSUB 1500
MV 1110 FOR I=0 TO 1:S(I)=0:D(I)=0:X(I)=1:CL(I)=6:G(I)=SP+D:NEXT I:FOR I=0 TO 19:L(I,0)=22:L(I,1)=22:NEXT I
HK 1115 Q=53279:P=0
AF 1120 POSITION 1,6:? #6;"option  ";SL;" SUPPLIES":POSITION 1,D:? #6;"select ";N;" PLAYING"
ID 1130 POSITION 1,14:? #6;"start     TO PLAY":FOR Z=1 TO V:NEXT Z:I=PEEK(Q)
IZ 1135 IF I=3 THEN SL=SL-5+45*(SL=D):POKE Q,7
LN 1140 IF I=5 THEN N=1+(N=1):POKE Q,7
DN 1150 IF I=6 THEN 1170
OU 1160 GOTO 1120
CV 1170 POKE SC,0:A=0:X=0:Y=21:E=V:R=19:T=0:? #6;"↖":POSITION 1,0:? #6;S(0):IF N=2 THEN POSITION 14,0:? #6;S(1)
OB 1180 POKE 710,24-P*18:POKE SP+P*13,158:COLOR 137:PLOT 0,22:DRAWTO R,22:POSITION 0,23:? #6;"HISCORE:";H
PH 1190 COLOR B0:POSITION 14,23:? #6;"!:";D(P):FOR Q=1 TO 18:FOR I=17 TO 21:IF L(Q,P)<=I THEN PLOT Q,I
QE 1200 NEXT I:NEXT Q:FOR I=SP+8 TO G(P):POKE I,133:NEXT I:FOR I=6 TO 12 STEP 2:POKE DL+I,6:NEXT I:POKE DL+CL(P),134
PM 1205 POKE 512,0:POKE 513,6:POKE 54286,192:POKE 54,128:POKE SC,34
VY 1210 FOR I=1 TO 3:FOR Q=1 TO V:POKE FL-V,0:POSITION 6,D:IF N=2 THEN ? #6;"PLAYER ";CHR$(177+P)
PD 1215 IF N=1 THEN ? #6;"READY ?"
WN 1216 SOUND 0,5*Q,D,D:NEXT Q
OR 1220 COLOR 0:PLOT 6,D:DRAWTO 13,D:FOR Q=6 TO R:POKE FL-V,133:SOUND 0,D*Q,D,D:NEXT Q:NEXT I:POKE V0,0
```


continued on page 49

READERS POLL

RESULTS

Well, you've done it again! *Every single contribution* **(except one review by the Editor!) received a vote in the Annual Readers Poll. This once again shows what a diverse range of interest there is amongst Atari owners and, hopefully, confirms that we get the balance right. Here are the winners**

First: THE HARDWARE FACTS by John J. Smith
Second: HOUSE OF SECRETS by David Blease
Third: FIRST STEPS by Mark Hutchinson

The winner has received the top award of £50 of software of his choice whilst the two runners up each receive a copy of the book Computer Animation Primer valued at £19.95.

Congratulations to the above and congratulations to all the other contributors during the year. Even if you did not win you have the satisfaction of knowing that your article, review or program gave sufficient enjoyment to others for them to vote it in the top three contributions.

Another year begins. How about an article or program?

CROSSWORD CREATOR

by Les Howarth

Crossword Creator is written specifically for the 1020 Printer/Plotter and enables the user to create any number of 9 x 9 square crosswords, complete with clues. You may enter words wherever you wish.

The size of the grid is fixed by the DIMensioned arrays. WD array contains the finished crossword and BD array contains only the positions of the black squares. BD array is also used to draw the square and number it automatically. It is possible to alter the size of the grid but it would need a lot of work to do so.

CREATING THE GRID

All input is via the keyboard. Use the arrow keys to move the cursor about, there is no need to use the CTRL key. Characters are entered at the position of the cursor and can be changed by placing the cursor over an existing letter or may be erased with the DELETE/BACK SPACE key. If you are typing a word ACROSS, then the delete will work back across the screen and if you are typing a word DOWN, the delete will erase up the screen. The SELECT key will change the direction of typing and the current direction will be displayed on screen. Blank squares are created with the SPACE BAR.

PRINTING OUT

Once you are satisfied with your crossword, you have two choices.

START will print out two copies of the crossword. The first copy will be a completed crossword and the program will stop to allow you to tear off this copy to assist you with the clues. The second copy is a blank grid with the black squares and numbering included.

OPTION will give just one printout of a blank grid with black squares.

ENTERING CLUES

When the grids have been printed, you may type in the clues against each number as it appears. Type the clue and press RETURN. The clue will immediately be printed out. If you make a hash of it press START to re-do them. The printout will start afresh with either the across or down clues depending where you are up to.

The author would appreciate a copy of any improvements to the program or crosswords created with it. Send them to LES HOWARTH c/o PAGE 6 and we will pass them on.

```
UA 10 REM ******************************
ZW 20 REM ** 1020 CROSSWORD CREATOR **
YG 30 REM **    by  LES HOWARTH      **
UD 40 REM ******************************
TO 90 GOSUB 1200:GRAPHICS 0
CK 100 OPEN #1,8,0,"P:":OPEN #2,4,0,"K:":
   DIM BD(10,10),WD(9,9),A$(60),A(30),D(3
   0)
MU 110 S=0:POKE 752,1:GOSUB 1070:GOSUB 45
   0:GOSUB 160:POKE DL+21,2:POKE DL+22,2:
   IF S=1 THEN 920
NR 120 FLAG=0:? #1;"␛\*M10,-480*I*A"
XP 130 POSITION 2,20:? "TEAR OFF COPY NOW
   , IF REQUIRED.":? "▶PRESS RETURN TO CO
   NTINUE";:INPUT A$
GB 140 POSITION 2,20:? "
                  ":? "▶
          "
GV 150 GOSUB 420:GOSUB 160:GOTO 920
FX 160 ? #1;"␛\*52*M56,-22*C1":K=65
AK 170 FOR I=1 TO 10:? #1;"M76";",";-35*I
JH 180 ? #1;"D390";",";-35*I:NEXT I:? #1;
   "M76,-35":FOR I=1 TO 10
NB 200 ? #1;"M";41+I*35;",";-35:? #1;"D";
   41+I*35;",";-350:NEXT I:K=41:L=-35
MM 230 ? #1;"S2":FOR LINE=1 TO 9:FOR V=1
   TO 9
JE 240 IF BD(V,LINE)=0 OR BD(V,LINE)=2 TH
   EN 270
ZU 250 FOR W=1 TO 6:? #1;"M";K+W*5+(V*35)
   ;",";L:? #1;"D";K+W*5+(V*35);",";L-35:
   NEXT W
RI 270 IF FLAG=5 THEN ? #1;"M";K+9+(V*35)
   ;",";L-33:? #1;"P";CHR$(WD(V,LINE))
NB 280 NEXT V:L=L-35:NEXT LINE
JC 290 AC=0:DN=0:V=1:L=-43:? #1;"S0*M78,-
   38*C3"
VU 300 FOR LINE=1 TO 9:FOR I=1 TO 9:K=I-1
YK 310 FLAG=0:IF BD(I,LINE)<>0 THEN 400
IK 320 IF BD(I-1,LINE)=160 AND BD(I+1,LIN
   E)=0 THEN 350
MR 330 IF BD(I,LINE-1)=160 THEN 380
MU 340 GOTO 400
UO 350 IF BD(I+1,LINE)=0 THEN FLAG=1:AC=A
   C+1:A(AC)=V:IF BD(I,LINE-1)=160 AND BD
   (I,LINE+1)=0 THEN DN=DN+1:D(DN)=V
XI 360 IF FLAG=1 THEN 390
LC 370 IF BD(I,LINE-1)=2 OR BD(I,LINE-1)=
   0 THEN 400
ZH 380 IF BD(I,LINE+1)=0 THEN FLAG=1:DN=D
   N+1:D(DN)=V
SR 390 IF FLAG=1 THEN ? #1,"M";78+K*35;",
   ";L:? #1;"P";V:V=V+1:BD(I,LINE)=2
HN 400 NEXT I:L=L-35:NEXT LINE
ZC 410 RETURN
```

```
DB 420 FOR ROW=1 TO 9:FOR COL=1 TO 9
ZH 430 IF BD(COL,ROW)=2 THEN BD(COL,ROW)=
   0
LN 440 NEXT COL:NEXT ROW:RETURN
AD 450 ? "K":FOR I=0 TO 9:FOR V=0 TO 9:BD
   (I,V)=0:WD(I,V)=32:NEXT V:NEXT I
FA 470 FOR V=1 TO 9:BD(10,V)=160:BD(V,10)
   =160:BD(0,V)=160:BD(V,0)=160:NEXT V
WC 480 POKE 82,25:POKE 83,38:POSITION 25,
   4:? "┌──────────┐|            || FRI
   DAY FUN || SOFTWARE |";
BH 490 ? "|            || 1020 || C
   ROSSWORD || CREATOR ||     BY
   || L. HOWARTH |";
DV 500 ? "|            |└──────────┘"
NB 520 POKE 82,2:POKE 83,26:POSITION 5,0:
   ? "┬┬┬┬┬┬┬┬┬┬┬┬┬┬┬┬┬"
GX 530 FOR ROW=1 TO 16 STEP 2:POSITION 5,
   ROW:? "| | | | | | | | | |"
IC 540 POSITION 5,ROW+1:? "├┼┼┼┼┼┼┼┼
   ┼┼┤":NEXT ROW
BK 550 POSITION 5,17:? "| | | | | | | | |
   |":POSITION 5,18:? "└┴┴┴┴┴┴┴┴
   ┘"
GV 560 POKE 83,39:POSITION 2,22:? "SELECT
   -DIRECTION  START-PRINTOUT"
QA 570 ROW=1:Y=1:COL=6:X=6:OPT=1:CH=0:A$=
   "ACROSSdown  ":POSITION 2,20:? "ACROSS
   ":POSITION 6,1:? "?":GOTO 610
NY 580 T=WD((COL/2)-2,(ROW+1)/2):POSITION
   COL,ROW:IF T<>32 THEN ? CHR$(T+128)
AN 590 IF T=32 THEN ? "?"
ZS 600 POSITION X,Y:? CHR$(WD((X/2)-2,(Y+
   1)/2)):POKE 764,255
LU 610 T=PEEK(53279):IF T=6 THEN FLAG=5:R
   ETURN
OI 620 IF T=5 THEN OPT=OPT-3:OPT=ABS(OPT)
   :POSITION 2,20:? A$((OPT*6)-5,OPT*6):G
   OSUB 1100
FR 630 IF T=3 THEN FLAG=0:S=1:RETURN
EC 640 IF PEEK(764)=255 THEN 610
PQ 650 GET #2,CH:IF CH=32 THEN CH=CH+128:
   BD((COL/2)-2,(ROW+1)/2)=160:GOTO 750
EN 660 IF (CH>41 AND CH<44) OR CH=45 OR C
   H=61 THEN X=COL:Y=ROW:GOTO 700
GU 670 IF CH=126 THEN 830
SI 680 IF CH<65 OR CH>90 THEN 610
QO 690 GOTO 750
JZ 700 IF CH=45 THEN ROW=ROW-2:GOSUB 890:
   GOTO 740
LH 710 IF CH=61 THEN ROW=ROW+2:IF ROW>17
   THEN ROW=1:GOTO 740
RN 720 IF CH=43 THEN COL=COL-2:GOSUB 890:
   GOTO 740
LH 730 IF CH=42 THEN COL=COL+2:IF COL>22
   THEN COL=6
TF 740 CH=46
SJ 750 POSITION COL,ROW:? CHR$(CH):IF CH=
   46 THEN 580
XA 760 IF CH<>160 THEN BD((COL/2)-2,(ROW+
   1)/2)=0
VV 770 WD((COL/2)-2,(ROW+1)/2)=CH
TT 780 IF OPT=1 THEN COL=COL+2
LZ 790 IF OPT=2 THEN ROW=ROW+2
LZ 800 IF COL>22 THEN COL=6:ROW=ROW+2
AA 810 IF ROW>17 THEN ROW=1:COL=COL+2:GOT
   O 800
QP 820 GOTO 580
PJ 830 REM ** RUB OUT **
RI 840 BD((COL/2)-2,(ROW+1)/2)=0
HW 850 POSITION COL,ROW:? "?":WD((COL/2)-
   2,(ROW+1)/2)=32
HJ 860 IF OPT=1 THEN POSITION COL,ROW:? "
   ":COL=COL-2:GOSUB 890
TP 870 IF OPT=2 THEN POSITION COL,ROW:? "
   ":ROW=ROW-2:GOSUB 890
AF 880 POKE 764,255:GOTO 580
MV 890 IF COL<6 THEN COL=22
QH 900 IF ROW<1 THEN ROW=17
ZH 910 RETURN
TH 920 REM ** CLUES **
IS 930 POKE 764,255:? #1;"E\*C1*M10,-340*
   I*S1*A":? #1
OL 940 POKE 703,24:POSITION 2,19:? "▸ CLU
   ES ACROSS":? #1;" CLUES ACROSS":? #1:P
   OKE 703,4:? "K"
NK 950 FOR I=1 TO AC
UC 960 IF PEEK(53279)<>7 THEN I=AC:NEXT I
   :? #1:GOTO 940
MY 970 IF PEEK(764)=255 THEN 960
TC 980 ? A(I);"=";:INPUT A$:? #1;A(I);"
   ";A$:POKE 764,255:NEXT I
VC 990 IF PEEK(53279)<>7 THEN ? #1:GOTO 9
   40
CC 1000 POKE 764,255:POKE 703,24:POSITION
    2,19:? "▸ CLUES DOWN  ":POKE 703,4
OC 1010 ? #1:? #1;" CLUES DOWN"
KC 1020 FOR I=1 TO DN
ZC 1030 IF PEEK(53279)<>7 THEN I=DN:NEXT
   I:? #1:GOTO 1000
SL 1040 IF PEEK(764)=255 THEN 1030
CX 1050 ? D(I);"=";:INPUT A$:? #1;D(I);"
   ";A$
RU 1060 NEXT I:END
CA 1070 POKE 709,12:POKE 710,244:POKE 711
   ,74:POKE 708,170
JV 1080 DL=PEEK(560)+256*PEEK(561)+4
UT 1090 POKE DL+21,6:POKE DL+22,6:RETURN
AN 1100 FOR I=8 TO 0 STEP -1:SOUND 0,73,1
   0,I:NEXT I:RETURN
PN 1200 ? "K":FOR I=0 TO 63
PU 1210 READ A
EF 1220 POKE 1664+I,A
FC 1230 NEXT I
NT 1240 GRAPHICS 17:POKE 708,44:POKE 709,
   200:POKE 710,148:POKE 711,68
OZ 1250 POSITION 6,6:? #6;"THE   ┌┼─┼┐":POS
   ITION 2,8:? #6;"CROSSWORD CREATOR"
EP 1260 POSITION 3,10:? #6;"by LES HOWART
   H"
AO 1270 POSITION 3,15:? #6;"press return
   to":POSITION 7,16:? #6;"continue"
NT 1280 X=USR(1664)
```

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FOUR ADD-ONS

Hardware add-ons for the Atari have been few and far between in this country with little being imported for fear of incompatiblity and little interest being shown by British Companies. Suddenly, a new company, W.E.Electronics has produced four add-ons for the XL computers with the promise of more to come. So far produced are a cassette interface to allow ordinary cassette players or hi-fi decks to be used for storage, a printer interface, a speech synthesiser and a 32k RAM expansion for the 600XL. Let's take a look at each in turn.

CASSETTE INTERFACE

The unit is quite compact and plugs into the serial I/O port of the computer and then, via a choice of leads into either a standard portable cassette recorder or a Hi-Fi stereo recorder with provision for remote control of the cassette motor if the recorder allows this. Programs can be loaded or saved in the normal way and the unique Atari 'sound track' facility is retained. Using a non-Atari recorder means that you will initially have to experiment with volume levels to ensure successful recording but once this has been mastered, the settings can be left or noted for future use. Good results can be obtained but the use of a non-Atari cassette does tend to be a bit fiddly. Obviously the unit is aimed at those owners who have had troubles with their Atari Program Recorders (and there are many) who will no doubt be willing to put up with a little more inconvenience in order to successfully load and save programs. The price is £19.95 which is perhaps a little high and you need to specify which type of cassette you intend to use.

PRINTERFACE

Interfaces for printers are generally very expensive so this one at £33.95 may look attractive. Again the unit is very compact and plugs into *one* joystick port via a very short lead with 2' 6" of ribbon cable to the printer. The design works well on the XL models although it is difficult to use on the 400 and 800 as it sticks out at the front of the joystick ports. The main drawback to this type of printer interface is that it is software controlled and requires to be booted each time it is used. A boot cassette is provided for this purpose although the full source code is provided both in the documentation and on the cassette enabling anyone familiar with machine language to amend it for disk use or, more adventurously, use the interface to drive other devices. The interface works well with all the normal BASIC print commands and is a full 8-bit allowing graphics dumps to be performed on a suitable printer. Whilst it is compatible with AtariWriter there would be difficulty using it with a printer driver which itself needs to be booted up for use. If you have a limited system and cannot afford the price of a printer *and* an interface, the Printerface would no doubt suit you. The penalty for the saving in cost is the inconvenience of booting up each time and some limitations such as mentioned with AtariWriter but it should provide the means to access a printer at about half the cost of a normal interface.

SPEECH SYNTHESISER

Speech synthesisers for 8-bit micros are not greatly sophisticated and require considerable programming to be able to achieve good results. They are however great fun and you can spend many interesting hours perfecting programs, trying different spellings and timings to achieve quite good results. The W.E.E. synthesiser is allophone based which mean that it produces individual speech sounds rather than full words and therefore has an unlimited vocabulary. All you need to do is string different sounds together by poking a couple of locations with a number which represents a particuar sound. You need to understand the construction of speech and a comprehensive set of notes is provided for this purpose. These need to be read fully and then kept for reference to get the best results from the synthesiser. A cassete of demo software is provided which includes three programs which can be listed out to show you how to write programs of your own. The first program is the complete alphabet. The second is a demonstration of words and the third a simple childrens game of guessing numbers. The speech on these is quite recognisable but could be improved with further programming.

I tried the unit out with a ready made program allowing sentences to be typed in and found that the results were good although words occasionally needed to be spelled in a different manner, for example doubling or tripling letters for the correct emphasis. This could however be incorporated in the program and the right combination will be found by experimentation and practice.

Many people think that you can buy a Speech synthesiser, plug it in, type a question and get an answer! It is not that simple and you do need to know how to program (not necessarily on a complex level) but, with patience, the W.E.E. Speech Synthesiser will give you hours of enjoyment. The unit works well, is adequately documented and is a cheaper alternative, at £38.95, than those originally available from the U.S.A. Perfect for the late night compulsive programmer who gets a bit lonely!

600XL RAM EXPANSION PACK

At last a RAM expansion for the 600XL which is cheaper and, hopefully, easier to get hold of than Atari's own. Not much you can say about a RAM pack except that the unit is fitted upright instead of out flat which makes it more compact and that it works well as a RAM *expansion*. Note the word expansion for, unlike Atari's 64k module which is a complete 64k memory, the W.E.E. RAM pack *adds* an extra 16k or 32k. What this means is that some (a very few) programs which switch out the XL operating sytem will not run. Fortunately these are quite rare and you may not have any problems. If you write your own programs or use magazine

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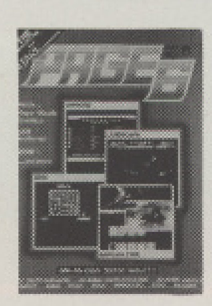
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Atari Art



Harvey Kong Tin was a regular contributor to PAGE 6 before he moved back to New Zealand. He has since sent in many fine examples of Atari graphics using all different utilities. This picture entitled CALLY was drawn with Atari Artist and the Touch Tablet.

Another picture from Harvey Kong Tin this time using Prices Color Picture Painter from Antic magazine. Harvey considers himself more of a graphic designer than a programmer and has sent in two complete playfields for a scrolling arcade game in Antic mode 4. He would like to enter into a partnership with a good programmer. If you are interested write to Harvey c/o PAGE 6.





Highland by David Encill of Birmingham started off as a doodle on the Atari Touch Tablet before growing into the picture here. David has also had great success in using the overlay on the Touch Tablet to produce pictures from photographs.



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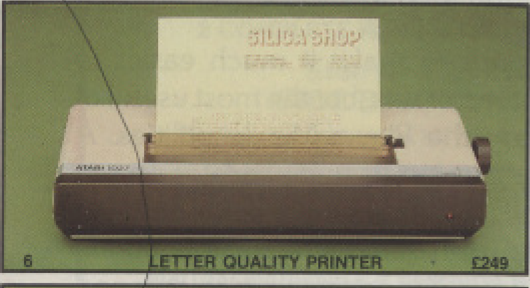
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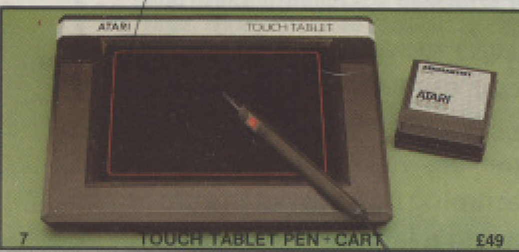
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English Software's

E.S.FORTH

reviewed by Steven Burke

FORTH is an increasingly popular language, and **E.S.FORTH** is one of several versions available for ATARI computers. It will run on 400, 800 and XL models having at least 32K. Cassette and disc versions are available, and both are very good value.

Operations are carried out in FORTH by executing commands, known as "words". Every version of FORTH contains a "dictionary" of these words. A FORTH program is written by defining new words, which are added to the dictionary, to perform new functions. This is done by writing chunks (or "screens") of source code containing the definitions, which are then compiled into the dictionary.

FORTH is a structured language, in that the program flow is not controlled by jumping between numbered program lines, as in BASIC. This forces the programmer to think more carefully before he starts writing his program, and results in the program being much better organised. It also means that it is much easier to keep lots of different program utilities which are loaded in at will without worrying about conflicts between line numbers.

FORTH is claimed to have a number of advantages over BASIC, especially that of speed. It is indeed much faster than BASIC, but this does not mean that you can use FORTH to write arcade-quality programs with the same ease as ordinary BASIC programs. If neccessary though you can speed things up further by using machine code routines. FORTH is much more versatile than BASIC, and allows the user far more control over what is happening inside the computer. For this reason I find it a much more pleasing and interesting language to use.

E.S. FORTH is based on a standard called fig-FORTH, but claims to have been internally optimised for speed and efficiency. I tried a few crude bench tests and found that it did indeed run noticeably faster than two other fig-FORTH based ATARI languages. The version of E.S.FORTH I tried was cassette based. This reduces costs when compared with cartridges, and renders it available to those users who do not have disc drives. However, like all RAM based languages a program crash often means switching off the computer and starting again from scratch, which can be time consuming when you have to load the language off a cassette.

An area of RAM is set aside to simulate a disc, and contains a number of screens into which the user can write source code for his FORTH program. The size of the area (and hence the number of screens) is set by the user at the start of a programming session. Screens are written using the ATARI screen editor, as in BASIC, except that the user must remember when altering a line to insert "P" between the line number and the line's text. Otherwise strange things happen. Other editing facilities are also provided, these are standard FORTH editing commands, although in E.S.FORTH they are permanently resident and operational, which is not usual.

Once the screens have been written they can be stored individually or as a set on a cassette, and can be compiled into the language's dictionary to enable the program to be run. Five screens can be simultaneously stored in a 32K system and still leave room for a complex compiled program. More screens can be accomodated by sacrificing display and/or dictionary memory. However this is not neccessary if you are willing to write your program in separate sections which are successively retrieved from cassette and compiled which, with a little thought, could be done automatically.

The basic dictionary of E.S. FORTH contains nearly all the standard fig-FORTH commands. Those that are missing relate mainly to the use of discs. It should be noted that one of the beauties of FORTH is that in principle adding new words, for example to make up for omissions in the basic dictionary, should not present problems, so long as the functions of the words are understood.

The E.S.FORTH dictionary is also well-stocked with commands specifically for the ATARI. These are mostly like corresponding BASIC commands. They include I/O words such as OPEN, CLOSE, PUT, GET, graphics words such as GRAPHICS, COLOR, PLOT, DRAW, as well as other types of words, e.g., STICK, SOUND, etc. There are however a number of commands which do not have BASIC counterparts. There is for example a very useful PLAY command, which is like SOUND except that it has a time parameter, so that the sound stops after a preset duration. Processing continues while the sound is playing.

There are also commands to make it much easier to design and use custom character sets, but the most useful of these extra commands are the Player-Missile utilities. A single command sets up the registers and allocates screen memory. Other commands are provided, e.g. for defining and switching between player shapes (to permit animation), for moving the players and missiles, setting their colours and widths, etc. Controlling player movement in response to a joystick is made particularly easy. Anyone who has tried writing even simple Player-Missile routines in BASIC will know how tedious this can be, especially if you have to resort to clever little programming tricks to get the players to move quickly enough. Having a language that can handle this for you makes a very pleasant change, and for this reason alone I would recommend E.S.FORTH.

Some versions of FORTH are provided with an assembler, which enables new words to be defined in machine code to increase speed, but unfortunately E.S.FORTH does not have one. Instead it is possible to run the language with the ATARI ASSEMBLER/EDITOR cartridge in place, and switch control between FORTH and the cartridge. This is useful in some situations, but makes saving and loading FORTH programs written partly in assembly language awkward. However, some public domain assemblers have been written in FORTH, and the interested user should be able to get hold of a source listing without too much

difficulty.

A more serious omission is the lack of any command to allow the FORTH dictionary (including any new words which the user has defined) to be saved on cassette. This means that every time you wish to run a program or utility, you have to load the language itself and then load in and compile the source code (i.e. the screens), which could take a considerable time, particularly if you have several different utilities which you want to use together. The experienced user would find a way to solve this problem, but for the beginner it could be a real nuisance.

The documentation supplied with E.S.FORTH is not, and does not claim to be, adequate for the beginner. No attempt is made to teach FORTH, and as this language is so different from BASIC, especially in its "backward" looking syntax, the novice would need to buy a suitable book. As E.S.FORTH is so cheap, this is not unreasonable. Much of the book supplied with E.S.FORTH is taken up with a reproduction of literature issued by the FORTH Interest Group, including a glossary of fig-FORTH words and a "model" which explains in detail the inner workings of the language and which would be useful (and comprehensible) only to the very experienced user. The rest of the book contains enough to explain those features specific to E.S.FORTH, and includes short programs to demonstrate the Player-Missile utilities.

Anyone who likes programming but only knows BASIC doesn't know what he's missing. Even ignoring the usefulness of the FORTH language, just learning how to use it and what it can do is fascinating. If you are interested in computing, rather than simply playing games you have bought, then you can't fail to get excellent value by buying E.S.FORTH.

Hardware from page 30

programs you should never have any problems and the overwhelming majority of commercial software will be alright. We have had one attached to a 600XL for a couple of months and it has performed perfectly. You still get the same amount of user RAM as on an 48k 800 or an 800XL. Prices are £52 for a 16k expansion (which may be upgraded) or £66 for a 32k pack.

Further details of these products can be obtained by sending a large s.a.e. to W.E.Electronics, 19, North Street, Emsworth, Hants.

NOTE: Certain prices have been reduced since this review was prepared.

THE SOFTWARE REVIEWS

JOUST
ATARI
16k ROM

Joust is a direct copy of the arcade original complete with lava troll, pterodactyl and all. The game has a mediaeval feel with the player finding himself riding upon a flying ostrich(!) and jousting against other knights. You must attempt to knock the other knights off their mounts by bumping them from above. Pressing the joystick button gives you flight while the stick gives you movement. Easy? Not quite, for many different things hinder your progress such as floating platforms with which you often collide. Sometimes when you dislodge a knight he leaves an egg behind which will hatch into another knight if you don't quickly run over it. Other enemies include a lava troll who tries to grab any low-flying birds and a pterodactyl who does its utmost to eat you. Only the pterodactyl can be destroyed by hitting him directly on the head with your pole. One final hindrance is that you move with Newton's Laws of Motion i.e you cannot stop dead, you have to decelerate and accelerate.

On power-up a nice title page is shown with the top half taken up by the name written in the same style as in the arcade. The lower half is in Graphics 0 and gives you details of copyright, number of players (1/2) and the difficulty level from 1 to 4. Pressing START begins the game. The graphics in Joust are good. The islands are well arranged and the birds very neat. You can tell when an ostrich flaps its wings and the lava troll's hand is very good. The sound is simple but pleasant. Not really brilliant but quite adequate.

Joust is a very enjoyable and addictive game. I find myself trying to knock other ostrich riding knights from the sky all day. Only a couple of gripes. Sometimes after you have lost one of your five lives your knightless bird takes ages to get off the screen and there is no high score table.

Joust is a very good game. Not the best, but very good.

PITSTOP ... EPYX ... 16K ROM ... 1/4 PLAYERS

Not surprisingly PITSTOP is a racing game. In a joystick controlled formula one car, the player(s) can race around a chosen circuit as many times as he/she wishes. Grand Prix options include Monaco and Kyalami and a host of others.

Speed, time, fuel consumption and a map of the circuit are shown as you race past other drivers. Just another run of the mill driving game you might think but the best is yet to come! An extra feature in PITSTOP which makes it different to other racing games is that your tyres wear out after every few collisions and the lighter in colour they become, the nearer they are to blowing up. To add to this problem your fuel runs out as you race so that you must make a judgement about when to pull into the pits.

In the pits, the player sees four men, one holding a flag to allow you to leave the pits, one holding a fuel pipe and two ready to change your tyres. Having stopped the car you must use the joystick to select one of the pit crew to change tyres or re-fuel. The chosen mechanic must be guided either to the tyre to be changed or to the petrol tank to perform his task. Care must be taken not to overfill the tank which may then explode causing you to re-fuel from scratch. Changing tyres means that your crew member must remove and replace each tyre. All the while the clock keeps ticking and the other cars can be seen flashing by at the top of the screen. Time is crucial and as soon as you have finished you must select the man with the flag to re-start the race.

PITSTOP is not as good as POLE POSITION but with the added features it comes a pretty close second. You can even hold a competition with up to three friends.

SNOKIE
FUNSOFT (U.S.GOLD)
48k cass/disk ... 1/2 players

In SNOKIE the player controls a red and white(!) penguin moving him across a rocky landscape, onto floating islands, through laser beams and more. The game seems to be derived from Scramble and it reminds me of Sea Dragon although it is not as good.

The graphics are simple and fairly crude although they are very clear. Colour is adequate (just!). Sound follows the same lines as the graphics. No four channel stuff here! The controls are a bit sluggish so that you can lose lives unnecessarily but a nice feature when you die is that a skull appears and winks at you! This little feature actually makes the game a little more addictive.

A few years ago SNOKIE would have represented very good value for money at £9.95 for cassette (£12.95 for disk) but nowadays with Atari cartridges selling at the same price it no longer seems so. Even so SNOKIE is well written and is not rubbish, it is just another average game.

Reviewed by Paul Blazeby

THE SOFTWARE REVIEWS

BOULDER DASH
FIRST STAR SOFTWARE
32k CASSETTE

This game was recently selected as game of the month in Computer & Video Games and was voted one of the top ten computer games of 1984 in OMNI magazine. Need I say more?

Well, I suppose I should. Boulder Dash is what I would describe as a thinking man's arcade game. You do need to be quick on the joystick but rush headlong in and your lives will quickly vanish. In the game you play the part of 'Rockford', a little creature who can only be described as cute - if you pause during play or use the spacebar to freeze the game he puts his hands on his hips, winks at you and taps his foot impatiently.

The object of the game is similar to other digging games i.e. you travel through caves to collect gems. It is however much more difficult than most with many problems to solve. Your biggest problem is the boulders which are numerous and, if undermined, will be dislodged and will crush little Rockford. They fall in a very realistic manner bouncing off other boulders and trapping or killing you if you are not careful. Each screen has a time limit at the top of the picture with the number of gems needed to reveal a flashing exit.

In addition to the boulders, there are Fireflies which are normally lethal but which on some screens can be converted to gems, an Amoeba which can both help and hinder and magic walls. After every 5 screens there is an optional quick, but not too easy, screen to solve for a bonus life. In addition to this, bonus lives are awarded every 500 points. There are 16 screens in all to be cleared, each more difficult than the one before and each screen requires very careful planning.

All in all an excellent game. Sound and graphics are marvellous. Easy to get into, but very difficult to solve. Well worth buying.

FORBIDDEN FOREST
ENGLISH SOFTWARE
16k CASSETTE

Oh dear! Is this from the same company that bought us Jet Boot Jack? The game is boring and the graphics are dreadful. The sound isn't up to much either!

You play the part of an archer who has to shoot a number of enemies. Starting in daylight, you are attacked by a number of spiders looking like badly knitted balls of wool, then by a bee, some skeletons, a phantom, a dragon and finally the Demogorgon. As time progresses, night falls and it gets darker.

After destroying each enemy you have to sit and wait for what seems like ages whilst the archer does a silly dance. I could live with some of the games shortcomings if it was a challenging game, however on the first attempt I cleared the first two levels and then gave up, and I am a long way from being an expert.

I should think that this is a conversion from another machine but what is the point if you ignore the Atari's superior features? Definitely not one of English Software's better efforts and I'm afraid I cannot recommend it.

Reviewed by Gerald Swan

BRUCE LEE ... DATASOFT 32K CASSETTE

This has also been chosen by another magazine as Game of the Month and again is a game that requires some thought as well as a quick hand on the joystick to overcome the various obstacles put in your path.

Your role is that of the late film star and Kung Fu expert, Bruce Lee. Your task is to enter the Wizard's fortress, find him and destroy him. On entering each room you must collect a number of lanterns to reveal the secret entrances to the further reaches of the Wizard's domain. The lanterns are reached by jumping and climbing along the fortress walls and floors. Easy? No. As you leap happily about a black robed Ninja and a nasty green gentleman called a Yamo proceed to try and knock the daylights out of you! But you are Bruce Lee, right? So using your amazing Kung Fu skills, you duck, kick and chop your way through your enemies. As you travel through the 20 rooms of the fortress, you also have to deal with electrical charges and exploding bushes. As each room is entered, thought and planning are needed. Fortunately, on some of the more difficult rooms the Ninja and Yamo leave you alone to get on with your lantern collecting.

At the start of the game you have a choice of 1 or 2 players and you may select the computer to control the Yamo or you and a friend can take it in turns to be Yamo and Bruce Lee. Once again an excellent game. Great graphics and a lot of fun.

contact

WARNING!: The CONTACT column in issue 10 had a message from James Stevens. There have been several complaints over this individual and readers are advised not to send money or tapes to him.

ASSEMBLER/CASSETTE: Is there any way to load machine code programs using the ASSEMBLER/EDITOR cartridge with the program recorder? Frankie Smyth, 62, Orchardville Ave., Finaghy, Belfast, BT10 0JH

TECHNICAL NOTES FOR 400/800: Required new, or secondhand. Any condition would be acceptable. Frank Murphy, 10, Elton Avenue, Greenford, Middx, UB6 0PW

PRESTON ATARI CLUB: New meeting place is ST. ANTHONY'S CLUB, ST. ANTHONY'S DRIVE, CASLEY CAUSEWAY, FULWOOD, PRESTON. Meetings are now every third Thursday in the month at 7.30 p.m.

PEN PAL: Pen pal wanted with Atari 800 with view to swapping hints on adventure games and general discussion. Christopher Heath, 4, Gatacre Avenue, Oswestry, Shrops. SY11 1DR

SANDS OF EGYPT: I cannot take my fronds, ride my camel or remove my cover. Help! Andrew Starkie, 109, Watling Street Road, Fulwood, Preston, Lancs, PR2 4BQ

NORTHERN IRELAND ATARI USERS: Send your name and address to F. Smyth, 62, Orchardville Avenue, Finaghy, Belfast, BT10 0JH for details of User Group and FREE copy of newsletter.

SCOTT ADAMS ADVENTURES: Can anyone tell me how to get to the Indian Village in GHOST TOWN? Or how to open the crate in PIRATE ADVENTURE? Or get past the chandelier in Claymorgue? Or what to do in SAVAGE ISLAND 2 after meeting 'Argh'? I will swap hints on Adventureland, Voodoo Castle, Mission Impossible, The Count, Strange Odyssey, The Hulk, Pyramid of Doom or Mystery Funhouse. Phone Tony on 04555 3159 or Peter on 04555 4950

ISSUES 1 & 2: Copy of typed in listing of RESCUE MISSION offered in exchange for complete photocopies of issues 1 & 2 of PAGE 6. Martin Sisson, 45, Westerfield Way, Silverdale, Nottingham, NG11 7ET. Tel. 0602 817 598

CASSETTE BOOT: Can anyone tell me how the data statements for writing to cassette are arrived at in loaders for machine code listings such as published in ANALOG? I know that the first 6 bytes are the header, beginning load address and end load address but what are the rest? Linda Tinkler, 33, Ferry Brow Road, Upton, Wirral, Merseyside, L49 8EE

FLANDERS ATARI HOME COMPUTER CLUB: I recently started an Atari club in Bruges. We would very much like to get in contact with clubs in the U.K. We have a particular problem with DOS 3.0. When using this we have only 34 free blocs. How do we obtain more? Paul George, 2, Montgomery Avenue, B8300 Knokke-Heist 1, BELGIUM

822 THERMAL PRINTER: Has anyone got a spare handbook for the 822? A photocopy would do. Willing to pay. Please contact Brian Wells, 36, Church Road, Longlevens, Gloucester, GL2 0AH. Tel. 0452 20141 after 6 p.m.

FORTH: Are there any other Atari FORTH users I could get in touch with? Peter Coates, 45, Acacia Road, Hampton, Middx. *(Peter sent in a demo disk of GOS-FORTH which he has developed. VERY impressive! Ed.)*

SOUTH CHESHIRE ATARI USER GROUP: Meetings are held once a month in Crewe. All Atari owners new or old welcome. Further details are available from the Secretary, 4, Yates Street, Crewe. Tel. CREWE 67773

HOUSE OF SECRETS: This is my first adventure and I am stuck! I have found the target and have tried my best to do something with it but without success. I have been outside again and hunted round in case I had missed something but no luck. Can anyone help? Ken Johnson, 26, Henderson Street, North Rockhampton, Queensland 4701, AUSTRALIA

BACK ISSUES: Wanted - PAGE 6 Issues 1,2,3,5 and 6. Also some Antic/Analog issues and Atari books/documentation. Please phone Chris King on 01 478 5936 (evenings and weekends)

The CONTACT column may be used for any purpose other than exchange or sale of software. If you have a problem send it in to CONTACT. If you can help someone else, get in touch.

THE SOFTWARE REVIEWS

SPELL ME ... CASTLE SOFTWARE ... 48K DISK/CASSETTE

One or two programs have appeared to teach pre-school children the alphabet but there have been few (if any) to cover the next step of word association and spelling. SPELL ME is ideally suited to the slightly older child who has mastered the alphabet and simple words and needs to practice or recognise longer words and the association of words with pictures. The program was conceived by a teacher and programmed by someone obviously familiar with the Atari.

A series of pictures of everyday objects are presented on screen together with a word identifying the picture. The object is to correctly repeat the word using the keyboard to score points. A successful effort is rewarded with a point and the playing of one of three nursery rhymes. Failure means another try and a point lost before the computer repeats the word correctly. A word that proves too difficult may be changed with the START button. Initially words are presented in upper case as this matches the letters on the keyboard and will help the child to associate the keys with the alphabet but it is recognised that children learn in lower case and this option may be chosen although the parent may then have to help in the choice of the correct key.

On the first level the word associated with the picture is displayed on the screen and it is merely necessary to copy it. Level 2 shows the word for a short time and the child has then to remember and type it. The most difficult level teaches word association by just presenting the picture. There are around 38 words in all (more on the disk version) each with an excellent illustration and the screen is laid out to good effect. Sound, although not complex, is used well.



SPELL ME comes with a brief manual emphasising the need for parents to take an active part in a child's education. If your child has reached the age of around four or four and a half and you want to encourage his or her development then SPELL ME together with your Atari could well prove to be an excellent investment.

RAILS WEST ... SSI ... 48K DISK ... 1/8 PLAYERS

It is very difficult to review certain programs without having spent a great deal of time exploring and playing them. Simulations are a case in point and Rails West is an excellent and complex simulation of the construction of the railroads across America in the 19th century.

Up to 8 players can compete against each other or the computer to try and build a railroad and amass a personal fortune along the way. The simulation is complex requiring a knowledge of economics, stock, floating bonds and management of debts. Add to this the threat of other interested parties trying to take over your railroad, booms, depressions and market fluctuations and you can well understand why a quick glance is not sufficient for a full appreciation of this program. As well as being a game of developing skill it is educational in the understanding of economics and the history of development of unexplored territory in the American mid-west.

Rails West may take some time to learn and fully understand but if simulations are your forte, then you will expect a long lasting game that you can return to time and time again with ever increasing knowledge and understanding. Not an excursion for beginners but well worth the effort for those who already understand and enjoy the computer simulation. Rails West should be an ideal thought provoking excercise for a family or group of friends but is also a game which can be played alone against the computer.

Reviewed by Les Ellingham

AWARDS

Both Paul Blazeby and Gerald Swan have been awarded an ATARI game on ROM for their reviews.

Can you write three reviews of your favourite, or not so favourite programs?

ACCESS III

by Matthew Jones

If you have been a DOS 2 user in the past and made the mistake of transferring all your files to DOS 3 when you bought a 1050 you are probably now regretting it. Whilst DOS 3 allows you to convert *from* DOS 2, it does not allow conversion back. (Perhaps Atari really did know what DOS 3 was like!).

If your first drive was the 1050, then you probably don't know about DOS 2 anyway. DOS 3 is fine for beginners but once you have passed the learning stage, you will want a DOS that is a *utility* and nothing more. You will need a *fast* and *functional* DOS. DOS 2 may not be the best but it is certainly better for the experienced user than DOS 3. You will have to trade off the enhanced density of the 1050 drive as DOS 2 will not support it but you will benefit from more time and less frustration when doing those disk housekeeping chores. In addition you will get greater compability with other users for DOS 2 is still the accepted standard for *all* systems.

HOW DO I DO IT?

Until now you couldn't but ACCESS III will allow you to convert all your DOS 3 files to DOS 2. It is quite simple to use. Type in the listing and, having checked it with TYPO II, SAVE a copy before running it. RUN the program and you will be prompted to insert a DOS 2 formatted disk in the drive whereupon a file called ACCESS.III will be written to the disk. This file can be loaded with Option L (Binary Load) of the DOS 2 menu and will run automatically.

The program fully prompts you to insert disks and type filenames in the correct order. Note that the program does not copy an entire disk, each file must be copied individually. It will also work with other DOS systems if, for example, you use true double density and wish to use one of your programs on a single-density drive.

Atari's next revision of DOS will be an upgraded version of DOS 2 so it looks as if DOS 3 is destined for oblivion. With ACCESS.III in your utility collection however, all is not lost!

```
HY 10 REM ****************************
LR 20 REM *     A C C E S S  III      *
YC 30 REM *        a utility          *
YJ 40 REM *           by              *
AA 50 REM *     Matthew Jones         *
GI 60 REM * ------------------------- *
RU 70 REM *   ALL RIGHTS RESERVED     *
GK 80 REM * ------------------------- *
IG 90 REM ****************************
BQ 95 REM
OE 100 ? "KINSERT DISK IN DRIVE 1 - HIT R
   ETURN":?
UG 110 DIM A$(100),Y$(1)
UI 120 INPUT Y$:? "WRITING FILE":?
GX 130 TRAP 200:RESTORE
JR 140 OPEN #1,8,0,"D:ACCESS.III"
ZL 150 READ A$:FOR X=1 TO 50
LM 160 A=ASC(A$((X*2)-1)):B=ASC(A$(X*2))
HP 170 HI=(A-48)-(A>64)*7:LO=(B-48)-(B>64
   )*7:BYTE=LO+HI*16
HK 180 PUT #1,BYTE:NEXT X
OB 190 GOTO 150
PM 200 CLOSE #1:? "ACCESS III":? "IS":END
WJ 1000 DATA FFFF0034893D453A9B4B3A9B443A
   2020202020202020202020009B00A9048D7C3C
   A9008DDC02AD1FD0C906D0038DF73AA230
OD 1010 DATA A9039D4203A90C9D4A03A9349D45
   03A9009D44032056E4A9008DC602A240A9039D
   4203A90C9D4A03A9349D4503A9039D4403
CK 1020 DATA 2056E4208E3AA901207E3CA90085
   568DF002A9128555A9158554A230A90B9D4203
   A9009D48039D4903A97C2056E4A920A20B
QX 1030 DATA 9D0734CAD0FAA9008D153420DF3C
   C97EF01EC916F01DC99BF013C92EF077C93090
   E9C95BB0E5C94190144CD7344C9D354C4D
QM 1040 DATA 35A909207E3C20DE3A4C4D35C93A
   B0C9AD1534F0C4ADDE3CAC1534990834C88C15
   34A230A90B9D4203A9009D48039D4903AD
AZ 1050 DATA DE3C2056E4AD1534C908F025C90B
   D097A230A90B9D4203A9009D48039D4903A91E
   2056E420DF3CC99BF07EC97EF02AD0F3A9
QM 1060 DATA 1C8555A9008556A9158554A230A9
   0B9D4203A9009D48039D4903A97C2056E4A908
   8D15344C9B34A9008D1534A9138555A915
RH 1070 DATA 8554A9008556AC1534A230A90B9D
   4203A9009D48039D4903B98135F0092056E4EE
   15344C5E354C64342E2E2E2E2E2E2E2E7C
PU 1080 DATA 7C2E2E2E00A900207E3C20DE3A20
   DE3A4C4D35A9018DF002203238A906207E3C4C
   B1350000000000A9108DAF35A9008DB035A9
GB 1090 DATA 3E8DAE35A9808DAD35A9018D0103
   ADAF358D0A03A9008D0B03ADAD358D0403ADAE
   358D0503A9522053E4AD0303C901D0A2EE
GJ 1100 DATA AF35ADAF35C918F014ADAD351869
   808DAD35ADAE3569008DAE354CC535A9008D44
   36A001A93E85D2A98085D1B1D1D90734D0
PG 1110 DATA 07C8C00CF02AD0F218A91065D185
   D1A90065D285D2EE4436AD4436C93EF006A001
   4C1A3600A90A207E3C20DE3A4CA235A000
NT 1120 DATA B1D12940C900F0CEA907207E3CA9
   008DA0388DD0368DD136A00CB1D18D83388D84
   38C8B1D18D8538C8B1D18D8638C8B1D18D
BI 1130 DATA 8738A9018D0103A9188D0A03A900
   8D0B03A93E8D0503A9008D0403A9522053E4AD
   0303C901D022AD853820A238CE8338F02D
```

```
RB 1140 DATA ADAE35186906CDE602B011AC8538
   B9003E8D85384CAE364C8F350000AC8538B900
   3E8D8538A9018DD1364CE836A9008DD136
QO 1150 DATA A904207E3C20DF3CC97ED0034C4D
   35C99BD0F2A9018D0103A9528D0203A93E8D05
   03A9008D0403A9008D0B03A9108D0A0320
LZ 1160 DATA 53E4AD0303C901D0AAAD0F3EC9A5
   F0BEA90B207E3CADD036D035A002B910349911
   348810F7A92E8D1034A000B90834C920F0
EM 1170 DATA 08C8C008D0F44C6937983869078D
   6237A000B91034990834C8C005D0F5A220A903
   9D4203A9349D4503A9069D4403A9080DD0
WD 1180 DATA 369D4A032056E4C001D059A90B9D
   4203A93E9D4503A9809D4403ADD136D00FAD86
   389D4803AD87389D49034CBD37ADAD3538
RP 1190 DATA E9809D4803ADAE35E93E9D490320
   56E4C001D01EA90C9D42032056E4C001D012AD
   D136F002D02AA905207E3C20DE3A4C4D35
QQ 1200 DATA A900207E3CA220A90C9D42032056
   E430EF20DE3AA903207E3C20DE3A4C4D35AD84
   3838ED83380A0A8DF63AAD873838EDF63A
EV 1210 DATA 8D8738AD83388D8438A9008DA038
   A9018DD0362032384C863668684C4D35A90220
   7E3C20DF3CADDE3CC97EF0ECC99BD0F2A9
NJ 1220 DATA 018D0103A9528D0203A93E8D0503
   A9808D0403A9008D0B03A9108D0A032053E4AD
   0303C901F0034CE237A00FB9803EC9A5D0
HO 1230 DATA B98888B9803EC900D0B060000000
   00005752495454454E204259204D4154544845
   57204A4F4E4553000048A9008DAF358DB0
AK 1240 DATA 35680A2EB0350A2EB0350A2EB035
   1869198DAF359003EEB035ADA038D00AA93E8D
   AE35A9808DAD35A9008DA138A9018D0103
XS 1250 DATA ADAF358D0A03ADB0358D0B03ADAD
   358D0403ADAE358D0503A9522053E4AD0303C9
   01D029EEAF35D003EEB035ADAD35186980
EK 1260 DATA 8DAD35ADAE3569008DAE35EEA138
   ADA138C908D0B4A9FF8DA038604C8F357D1D1D
   1D1D1D2041434345535320444F53204949
QW 1270 DATA 49011C1E1E1E1E1E1E1E1E1E1E1E
   1E1E1E1EA0A0A0A0A0A0A0A0A0A0A0A0A0A0A0
   A01D1D1E1E1E1E1E1E1E1E1E1E1E1E1E1E
ZK 1280 DATA 1E1EA0A0A0A0A0A0A0A0A0A0A0A0
   A0A0A0A01C1E1E1E1E1E1E1E1E1E1E1E1E1E1E
   1E1EA0C1C3C3C5D3D3A0C4CFD3A0C9C9C9
XU 1290 DATA A01D1D1D1D1D1E1E1E1E1E1E1E1E
   1E1E61207574696C6974792070726F6772616D
   1D1D1E1E1E1E1E1E6279204D6174746865
VB 1300 DATA 77204A6F6E65731C1C1E1E1E1E1E
   1E1E1E1E1E1E1E1E1E1E1C1C1C1C1C1E1E1E6672
   6F6D2041544152492044F5320322E011D
XK 1310 DATA 1D1D1D1D1D1D1D1D1D1D1D1D1D1D
   1E1E1E1E1E1E1E1E1E1E1E1E1E1E1E1E1E1112
   12121212121212051112121212051D1E1E1E
XR 1320 DATA 1E1E1E1E1E1E1E1E1E1E1E1E1E1E
   1E1E1E1E1E1E1E1E1E1E46494C454E414D4520
   6973207C2E2E2E2E2E2E2E2E7C7C2E2E2E
QX 1330 DATA 7C1D1E1E1E1E1E1E1E1E1E1E1E1E
   1E1E1E1A12121212121212121212031A1212120300
   00A9398D9D3AA9008D8D3AAC8D3AB92C39
MA 1340 DATA F026C901F02548A230A9009D4803
   9D4903A90B9D4203682056E4EE8D3AAD8D3AD0
   03EE9D3A4C983A4CF83AADF73AD0EA20DE
VR 1350 DATA 3AAD1FD0C906D0E08DF73A4CB83A
   A9058DF63AA200A00088D0FDCAD0F8CEF63AAD
   F63AD0EE600000A510297F85108D0ED260
XA 1360 DATA 464154414C204552524F522D2043
   6865636B20796F7572206469736B2064726976
   652E00506C6561736520656E7465722074
EY 1370 DATA 686520444F532049494920666 96C
   656E616D6500496E7365727420444F53204949
   49206469736B2C207072657373205245 54
KU 1380 DATA 55524E0046696C65207472616E73
   66657220696E636F6D706C6574652E00496E73
   65727420444F53203220646973 6B2C2070
MB 1390 DATA 7265737320524554555 24E005472
   616E73666572206F662066696C6520636F6D70
   6C6574652E005365617263686 96E672066
MB 1400 DATA 6F722066696C65202E202E202E20
   2E00466F756E642066696C652C204C6F616469
   6E67202E202E202E00507265737320 4445
JZ 1410 DATA 4C45544520746F20726573746172
   7400566572736 96F6E20312E3120627920 4D61
   7474686577204A6F6E657300466 96C6520
ER 1420 DATA 6E6F7420666F756E642C20506C65
   61736520726574727 92E005361766 96E672066
   696C652C20706C656173652077616 97420
QJ 1430 DATA 2E2E2E003B023B263B483B6A3B84
   3BA43BBF3BDA3BF43C0C3C293C470000488D7D
   3CA9128554A9008556AD7C3C8555A230A9
DV 1440 DATA 009D48039D4903A90B9D4203A97E
   2056E4A555C903D0E6680AA8B9643C8DCF3CC8
   B9643C8DCE3CA230A9009D48039D4903A9
TN 1450 DATA 0B9D4203A455888888B90000F006
   2056E44CBB3CA5558D7C3C6000ADFC02C9FFD0
   11ADDC02C900D027ADB602C900D0204CDF
QE 1460 DATA 3CA9008DB6028DFF02A9408DBE02
   ADFC02C927F009C93CF04CD052080000A5558D
   133DAD7D3C8D123DAD113D207E3CA9008D
SN 1470 DATA DC028DB602A9FF8DFC0220DE3AAD
   123D207E3CAD133D8555A9148554A230A90B9D
   4203A9009D48039D4903A91D2056E44CDF
TG 1480 DATA 3CA9FF8DFC024CDF3CA240A9079D
   4203A9009D48039D49032056E430048DDE3C60
   A9808511A9FF8DFC0268684C4D3530E002
PL 1490 DATA E1021634
```

Crossword Creator from page 29

```
BE 1290 RETURN
AY 1300 DATA 173,36,2,141,193,6,173,37,2,
   141,194,6
KU 1320 DATA 160,180,162,6,169,7,32,92,22
   8,238
LL 1340 DATA 192,6,173,192,6,141,10,212,1
   41,26,208
DP 1360 DATA 174,252,2,232,240,238,172,19
   3,6,174,194,6
BY 1380 DATA 169,7,32,92,228,104,96,206,2
   00,2,173,200
NK 1390 DATA 2,141,192,6,76,98,228
```

THE HACKERS DOZEN

by Hugh Denholm

What is a Hacker's Dozen? Numerically of course it's sixteen (in honour of Atari's new 16 bit machine perhaps). What it actually consists of is a list of your most memorable software. The software could be memorable for two reasons, either you liked it or you loathed it! Below is my personal selection. I leave it up to you to discover which I love and which I hate!

1. DEADLINE. Ideally, my list would consist entirely of Infocom games, but that would be (even more!) boring. I've chosen Deadline because it was the first Infocom game I played, because I love the "chatty" style of the adventure and because they'd even programmed in a response to my attempts to do naughty things to the lady of the house when I cornered her in a bedroom!

2. BLUE MAX. The graphics are not as crisp as Zaxxon but the game is 100 times more playable. Goggles and flying helmets should be worn to generate authentic atmosphere.

3. STAR RAIDERS. A miracle in many ways. A miracle that something so advanced should have been written so long ago in only 8k. A miracle that Atari never bothered to release an even better version in 16k. Upon reflection, a miracle that Atari ever produced it in the first place!

4. SOLO FLIGHT. More of a navigational test than a flight simulator but still very challenging. Coming down through cloud in mountainous terrain with half your instruments not working is a guaranteed sweaty palms experience.

5. SENTINEL 1. With a spacecraft that closely represents a finned contraceptive and aliens that disguise themselves as low-res pixels, who can resist this game? I can!

6. UNIVERSE. Big game, big price. Guaranteed to ruin your wallet, your disk drive and your spare time. Possibly the most comprehensive game of its type ever written.

7. S.A.M. Sounds like a brain damaged American railway station announcer with severe adenoidal trouble, but great fun. Program it to seduce your wife or insult your mother-in-law, but don't get the programs mixed up!

8. SAVAGE POND. For: Cheap, clever concept, good graphics, addictive. Against: we all want to fight aliens, but who wants to live in a pond?

9. SPACE INVADERS. Imagine an alien race so advanced that they can develop a space ship capable of travelling across the vast tracts of space and time to finally arrive precisely on target just above the earth. Pretty clever guys, eh? So why, oh why, do these same aliens attempt to conquer us by prancing around in mid-air like an inebriated formation dancing team? What a game concept, it will never sell!

10. ENCOUNTER. Boring game, amazing graphics. Good for impressing visitors, especially if you tell them you programmed it yourself!

11. RALLY SPEEDWAY. The best two player game I know and a lovely simulation of car racing. I once played it for seven hours straight and my opponent and I never stopped laughing. (I don't know what he was laughing about, he lost!)

12. ALIEN SWARM. A great shoot-em-up which actually gets easier after 100,000 points. Play it when you want to convince yourself that you are good.

13. AIRSTRIKE. They tell me it's a classic but I find it close to impossible. Perhaps I should buy a joystick?

14. MINER 2049er. The best jumping game. Lovely graphics and some really tricky screens. There is a special number you can input to enable selection of any screen, but I've lost it. Guess I'll never see screens 6 to 10 again.

15. EASTERN FRONT. The Chris Crawford tour-de-force. I never wanted to go to Moscow anyway! Try the cartridge version for even more options. There's meant to be a technique to the game but the only technique I've found is to turn the bloody thing off and have a beer!

16. CHOPLIFTER. A silly simple game, but those little people waving at you are most appealing. They are so trusting, they even stand there and wave as you land on their heads, then they stop waving and make squelching noises instead.

What about YOUR Hackers Dozen? One of Atari's best (or worst!) ROM cartridges will be awarded to each of the FIVE most interesting, witty or clever entries or simply to those that tickle the Editor's fancy. Write them down (not too long) and include a list of the Atari ROMs you already have and you may get another to add to your list. Entries will not be acknowledged unless they are winners. Get writing!



Write to Mark Hutchinson at P.O.BOX 123, BELFAST, BT10 0DB

A-Z OF BASIC - PART 1

Over the next few issues First Steps will be presenting a complete A - Z guide to Atari Basic aimed at beginners but with, I hope, some hints and tips which more advanced users may find helpful. It would take a whole book to cover the subject in depth but I have included examples of many commands to enable you to understand them better. If you need additional help or help in other directions do not hesitate to write to me (with an SAE). I will try to solve your problems or, at least, turn you in the right direction.

Many of the BASIC commands have abbreviations which are shown in brackets. In addition to making typing faster, these can let you use a great many statements over the three available command lines only. When LISTed, the commands will appear as normal but spread over more than three lines. Use of abbreviations in typing listings will not affect checking utilities such as TYPO II. The drawback is that editing of entered lines is limited to the first three screen lines.

Direct mode uses no line numbers and will execute directly after <*RETURN*>, deferred mode is preceded by a line number and will work after RUN <*RETURN*> is entered.

ABS

This will return the absolute value of a variable or expression. This means that you will see the value without regard to the sign (which will always be positive). This will be handy when you want a value returned from a mathematical equation, but no sign.

Example: ? ABS(-0.05)

ADR

This will return the decimal address of a specified string. The address will change as the computer shifts the string around in memory to protect it. Most often used with machine code routines that have been placed into a string and recalled using USR.

Example: X=USR(ADR(S$))
or S=ADR(S$):X=USR(S)

AND

A logical operator used mainly with IF/THEN statements. All conditions must be true for it to work. Example 1 will only equal 3 when X=1 and Y=2 at the same time. Similarly, with example 2 the expression A will equal 1 (true) when B is greater than 0 and less than 5, otherwise A will equal 0 (false).

Example: IF X=1 AND Y=2 THEN Z=3
Example: A=(B<5) AND (B>0)

ASC

This will return the ATARI-ASCII (ATASCII) number for the alphanumeric (text character) supplied. The example will return the ATASCII code 65.

Example: ? ASC("A")

ATN

This will return the arctangent value for a given variable. Care must be taken to note if the computer is running in degree or radian mode.

Example: A=ATN(45)

BYE. (B.)

This command will revert to the memo pad or blackboard mode in 400/800 machines (as will no cartridge), and to the self-test mode in XL models. Basic programs and handlers (RS232 etc.) will still be held in memory and can be recalled only through SYSTEM RESET. The screen editor works but RETURN does not send a line to the interpretor. In older machines, BYE sets up a GRAPHICS 0 screen, however, if you were to set up any other graphic mode with a window and call BYE, only the window will be in the memo pad mode. This is because the window is GRAPHICS 0 itself. This means that you can leave some pretty display for someone to see, but not tamper with. Or you could exit to BYE to test the graphic symbol keys. Not a lot can be done with this command, but you can show more than just a simple screen.

CHR$

This is the opposite of ASC. This will return the alphanumeric for a given ATASCII value. The example will return 'A'

Example: ? CHR$(65)

CLOAD

This command will load, from tape into RAM, a program that has been stored using CSAVE. After <*RETURN*>, you will hear a single tone. Press the play button on the recorder. Then press <*RETURN*> to enter the program. Anything that was previously stored in RAM will be wiped out. Once in memory, the program can be LISTed or RUN. You can use a file name such as CLOAD "C:NAME" for convenience, but the filename will be ignored. There is a program (ACE from English Software) that will differentiate between programs stored on tape. It stores programs by filenames and will only load the program with the given filename, skipping over the other files - in the same way as the BBC micro.

CLOG

This will return the logarithm to the base 10 of a given value.

Example: A=CLOG(65)

CLOSE (CL.)

This command will close any I/O device number that has been opened.

Example: CLOSE #2

CLR

This will clear any strings, arrays, or variables that have been previously dimensioned in the program. Please note that ALL dimensioning will be cleared, whereupon you will have to

by Mark Hutchinson

redimension. This can be very handy when you only use a string at the start of a program. After use it can be cleared to save memory. It is also useful in debugging programs. Unfortunately it often seen in programs because of bad programming techniques.

COLOR (C.)

This statement ranges from 0 to 255. In four colour graphic modes, 0-3 will correspond to the first four SETCOLOR statements. COLOR 4-255 will then repeat, as only four colours are available. In two colour modes, 0 and 1 will correspond to the two SETCOLORS, and then 2 onwards will repeat this pattern. In text mode 0 however, COLOR will correspond to the 256 alphanumeric (text) characters available. In the other two text modes, only the first six bits will determine the character (a maximum of 64). The last two bits will set the colour of the character (a maximum of four).

When a graphic screen is called up all pixels will be set to 0. Therefore nothing will appear when you use PLOT unless a COLOR statement has been included. COLOR 0 will correspond to the background colour, that is why no colour appears. The example will print the first 40 characters on a GRAPHICS 0 screen. If you try changing to another graphics mode you will notice the colouring effect that has been mentioned.

Example: 10 GR.0:FOR CH=0 TO 39:C.CH:PLOT CH,0:NEXT CH

COM

This is the same as DIM. Not normally used, it was taken from the original Microsoft Basic that ATARI Basic is derived from. It means to COMmon variables.

CONT (CON.)

Using this and <*RETURN*> will cause the program to start running again after STOP, END, or BREAK has been encountered. The only problem is that, if the program has been stopped in the middle of a command line, it will continue on the next line. Therefore a loop may not be executed and an error may appear. It is normally used during debugging, but it has a use during the 'forced read/write mode' (PAGE 6, issue 6) when, contrary to ATARI's Reference Manual, it can be used in the deferred mode.

COS

This returns the cosine value for a given variable. Again, care must be taken about degree/radian mode.

Example: A=COS(45)

CSAVE

This transfers what is stored in RAM onto tape (RAM will not be wiped clean). Two tones will be heard when you press <*RETURN*>. You must now press both play and record buttons on the recorder. Press <*RETURN*> to transfer the program. A program saved this way can only be re-entered using CLOAD. Under certain conditions it is safer to precede CSAVE with LPRINT (LP.). Disregard any error message generated.

DATA (D.)

This statement is always used with READ. It holds all the information that will be used by a program. The bits of data to be read are separated by commas, and any spaces will be considered as part of the data (this is one of the most common causes of faulty programs). The number of READs must equal the amount of data stored, otherwise ERROR 6 (out of data) will occur. The computer will take care of precisely where the next bit of data to be read lies in the table. Therefore data statements can be placed anywhere in the program. Some people prefer to have the DATA associated with the READ statement, for easier debugging. Others prefer all DATA to be together, at the end of the program, for neatness. Both work equally well.

Example: 10 DIM D$(6):FOR T=1 TO 6:READ D$:? D$:NEXT T
20 DATA THIS,HAS,6,ITEMS,OF,DATA

DEG (DE.)

This will set trigonometrical functions to degrees. The computer is set to radian mode on power-up.

DIM (DI.)

This will dimension all strings, arrays and matrices. This means that memory has been set aside to store data in the above forms. It is good programming to place DIM statements at the start of a program. It must be noted that an array (a one dimensional list) and a matrix (a two dimensional table) both start at 0, whereas a string starts at 1.

Example: 10 DIM A(10): REM Store eleven.
10 DIM M(4,9): REM Store 5 times 10.
10 DIM A$(20): REM Store twenty.

DOS (DO.)

The Disk Operating System (DOS) consists of two parts. The DOS System (DOS-SYS) which is loaded into RAM during power-up of the computer with the drive switched on, and the Disk Utility Package (DUP-SYS) which is loaded by the command DOS. It will have no effect if DOS-SYS has not been loaded. Calling DOS will clear RAM, unless a MEM-SAVE file has been set up to store the current program. Returning to Basic will make the MEM-SAVE file load the original program. This can take a long time. Types of DOS (Mini-Dos, Tinydos, etc) use Basic POKEs or XIO to accomplish various functions without having to load up DUP-SYS.

DRAWTO (DR.)

An initial point must be set up using PLOT. A line will be drawn from this point to a second point at the co-ordinates given by DRAWTO. This second point will now become the initial point for another line again using DRAWTO. A graphic mode and colour must be designated first.

Example: 10 GR.8:C.1:PL. 0,0:DR. 160,80:PL. 319,159

END

This terminates a program, closing all files and sound channels. BASIC normally does this, so you should not need END except during debugging. However you will find some programs do not shut off sounds when complete, so END is needed occassionally.

ENTER (E.)

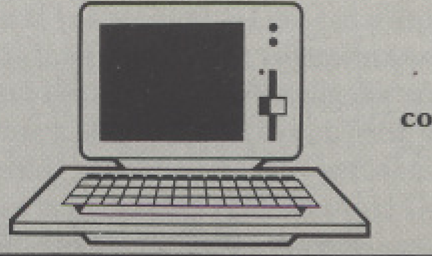
This will transfer a program to RAM that has been saved using LIST. It will not overwrite an existing program, providing that the line numbers are not the same. This is an excellent way of storing small subroutines and adding them to existing programs without disturbing the program. This can be done with disk or cassette.

Example: ENTER "C:"
ENTER "D:PART2.BAS"

EXP.

This will return the exponential of a given variable. It is safer to limit this to six figures for accuracy.

Example: ? EXP(5)



continues next issue

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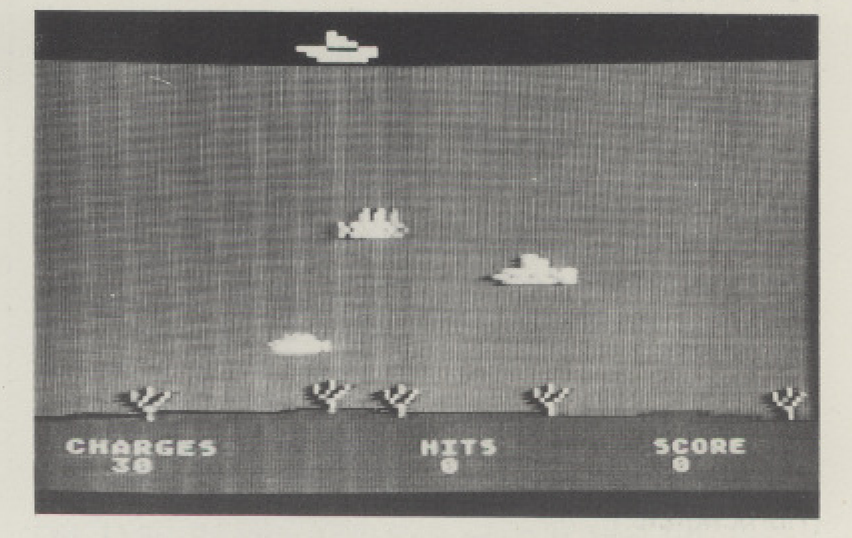
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DEPTH CHARGE

by Sydney Brown



The object is to try and destroy the submarines with a limited number of depth charges available to your destroyer.

Plug in a joystick to move the destroyer horizontally across the top of the screen and press the trigger to drop the depth charges. Charges will be dropped alternately from each side of the ship and only two may be dropped at one time. The fast moving small purple subs score 50 points each, the medium yellow ones are worth 20 points and the large green subs score only 10 points. Thirty depth charges are allowed for each game.

Bombs away!

```
HY 10 REM ******************************
FA 11 REM *        DEPTH CHARGE        *
FY 12 REM *      by Sydney Brown       *
GJ 13 REM * -------------------------- *
MM 14 REM *      First published in    *
NU 15 REM *        ACE NEWSLETTER      *
HO 16 REM *    3662, Vine Maple Drive  *
EF 17 REM *    Eugene, Oregon,  U.S.A. *
IO 18 REM ******************************
BQ 19 REM
IG 99 ? "K":GRAPHICS 7:POKE 752,1:? " JOY
   STICK 1 MOVES THE SHIP AND THE      BUT
   TON RELEASES THE DEPTH GHARGES "
ZA 100 ? " S.H.BROWN      COMPCO      1982
       "
CC 101 POKE 708,128:POKE 709,198:POKE 710
   ,18:GOSUB 900:POKE 559,62:POKE 623,1
KM 106 POKE 53248,100:POKE 53249,120:POKE
    53250,140:POKE 53251,160
FD 110 POKE 704,8:POKE 705,202:POKE 706,1
   06:POKE 707,220:PM=PEEK(106)-32:POKE 5
   4279,PM:POKE 53277,3:GOSUB 999
MN 119 POKE 53256,1:POKE 53257,1:POKE 532
   58,0:POKE 53259,0
BC 120 RESTORE :FOR MP=PM*256+1051 TO PM*
   256+1062 STEP 2:READ D:POKE MP,D:POKE
   MP+1,D:NEXT MP
JD 122 FOR MP=PM*256+1400 TO PM*256+1411
   STEP 2:READ D:POKE MP,D:POKE MP+1,D:NE
   XT MP
IY 124 FOR MP=PM*256+1690 TO PM*256+1695:
   READ D:POKE MP,D:POKE MP+1,D:NEXT MP
DV 126 FOR MP=PM*256+1892 TO PM*256+1903
   STEP 2:READ D:POKE MP,D:POKE MP+1,D:NE
   XT MP
HM 190 S=100:POKE 53248,S:S1=160:S2=50:S3
   =170:D1=0:D2=0:V=PM*256+800:CH=30:SC=0
   :HI=0:GOSUB 350
JJ 199 POKE 77,0:SOUND 0,100,8,2
SV 200 IF INT(PEEK(77))=1 THEN SOUND 0,14
   ,10,10:POKE 77,0
SZ 201 IF STICK(0)=7 AND S<187 THEN SOUND
    3,255,6,10:S=S+3:POKE 53248,S
PQ 202 POKE 53278,0:IF STICK(0)=11 AND S>
   53 THEN SOUND 3,255,6,10:S=S-3:POKE 53
   248,S
YY 205 SOUND 3,0,0,0:IF STRIG(0)=0 THEN G
   OSUB 300
TK 209 SOUND 0,100,8,2
VP 220 IF S1<10 THEN S1=200+INT(RND(0)*20
   ):W1=RND(0)*2
ZG 221 S1=S1-(1+W1):IF S1<200 THEN POKE 5
   3249,S1
JP 225 IF S2<10 THEN S2=200+INT(RND(0)*40
   ):W2=RND(0)*6
QP 226 S2=S2-(1+W2):IF S2<200 THEN POKE 5
   3250,S2
QI 230 IF S3>210 THEN S3=4-INT(RND(0)*30)
   :W3=RND(0)*4
FJ 231 S3=S3+1+W3:IF S3>4 THEN POKE 53251
   ,S3
NI 250 IF D1=0 THEN 255
OM 251 SOUND 1,V1-10,10,6:POKE V1,0:V1=V1
   +3:IF V1>V+170 THEN D1=0:V1=V:GOTO 255
UL 252 POKE V1,3
IH 255 SOUND 1,0,0,0:IF D2=0 THEN 270
RS 256 SOUND 2,V2-10,10,6:POKE V2,0:V2=V2
   +3:IF V2>V+170 THEN D2=0:V2=V:GOTO 270
VJ 257 POKE V2,12
MK 270 SOUND 2,0,0,0:IF D1=0 AND D2=0 AND
    CH<1 THEN 700
CV 280 Q=PEEK(53256):IF Q<2 THEN 285
AC 281 J=1:IF Q=2 THEN GOSUB 400
IP 282 IF Q=4 THEN GOSUB 425
IF 283 IF Q=8 THEN GOSUB 450
KI 285 Q=PEEK(53257):IF Q<2 THEN 299
AY 286 J=2:IF Q=2 THEN GOSUB 400
JE 287 IF Q=4 THEN GOSUB 425
IU 288 IF Q=8 THEN GOSUB 450
NK 299 GOTO 200
```

```
NR 300 IF D2=1 OR CH<1 THEN GOTO 310
CR 301 SOUND 0,8,8,12:FOR W=50 TO 0 STEP
   -2:SOUND 0,10,8,W/10:NEXT W:SOUND 0,0,
   0,0
OV 305 CH=CH-1:D2=1:POKE 53253,S+16:V2=V:
   POKE V2,12:GOTO 350
CN 310 IF D1=1 OR CH<1 THEN GOTO 349
CT 311 SOUND 0,8,8,12:FOR W=50 TO 0 STEP
   -2:SOUND 0,10,8,W/10:NEXT W:SOUND 0,0,
   0,0
FK 315 CH=CH-1:D1=1:POKE 53252,S-1:V1=V-2
   :POKE V1,3:GOTO 350
AI 349 RETURN
UO 350 ? "K":? "CHARGES            HITS
       SCORE":? "  ";CH;"              ";
   HI;"          ";SC
ZY 355 RETURN
OD 400 SOUND 1,77,8,8:FOR W=1 TO 21:NEXT
   W
FE 402 FOR W=160 TO 0 STEP -5:SOUND 1,77,
   8,W/10:POKE 705,128+W/20:NEXT W:S1=200
   :POKE 53249,S1:POKE 705,202
OE 405 SC=SC+10:GOTO 475
OW 425 SOUND 1,77,8,8:FOR W=1 TO 21:NEXT
   W
DA 426 FOR W=160 TO 0 STEP -5:SOUND 1,77,
   8,W/10:POKE 706,128+W/20:NEXT W:S2=200
   :POKE 53250,S2:POKE 706,106
PN 430 SC=SC+50:GOTO 475
ON 450 SOUND 1,77,8,8:FOR W=1 TO 21:NEXT
   W
KQ 452 FOR W=160 TO 0 STEP -5:SOUND 1,77,
   8,W/10:POKE 707,128+W/20:NEXT W:S3=10:
   POKE 53251,S3:POKE 707,220
RO 455 SC=SC+20
SD 475 IF J=1 THEN D1=0:POKE V1,0:V1=V
VR 476 IF J=2 THEN D2=0:POKE V2,0:V2=V
PC 477 HI=HI+1:GOTO 350
QY 700 ? "             YOU ARE OUT OF AMMO !!!"
   :? "PRESS START BUTTON TO RESTART GAME
   ";:POKE 53279,0:SOUND 0,0,0,0
FW 705 IF PEEK(53279)=6 THEN GOTO 190
RD 709 GOTO 705
LQ 900 COLOR 1:PLOT 0,3:POSITION 0,79:POK
   E 765,1:XIO 18,#6,0,0,"S:":FOR W=0 TO
   159 STEP 2:PLOT W,3:NEXT W
QE 901 COLOR 3:PLOT 10,79:DRAWTO 145,79:P
   LOT 24,78:DRAWTO 100,78:PLOT 50,77:DRA
   WTO 67,77:PLOT 123,78:DRAWTO 135,78
CQ 902 COLOR 2:A=20:B=73:GOSUB 905:A=55:B
   =71:GOSUB 905:A=69:B=72:GOSUB 905:A=10
   0:B=72:GOSUB 905
VR 903 A=150:B=73:GOSUB 905:RETURN
EG 905 PLOT A,B+1:PLOT A,B+2:DRAWTO A+3,B
   +5:PLOT A+3,B+6:PLOT A+3,B+4:DRAWTO A+
   6,B+1:PLOT A+2,B+2:DRAWTO A+3,B:RETURN
QK 999 FOR W=PM*256+768 TO PM*256+2047:PO
   KE W,0:NEXT W:RETURN
OA 1000 DATA 16,24,28,227,127,62
LM 1010 DATA 16,24,24,125,171,125
LQ 1011 DATA 16,24,24,125,171,125
DD 1020 DATA 4,12,12,190,213,190
```

Counteraction from page 13

```
CG 2600 ? :? "FIRST PLAYER TO MOVE ALL CO
   UNTERS   FROM HIS/HER BASE LINE."
BD 2610 POSITION 2,5:? "HOW TO MOVE "
EE 2620 ? :? "PRESS START TO THROW BOTH D
   ICE.THE  COMPUTER CHECKS FOR MOVES AND
    WILL  OFFER OPTIONS WHER";
ZC 2630 ? "EVER POSSIBLE."
HW 2640 POSITION 2,11:? "MOVE OPTIONS"
LT 2650 ? :? "WHEN OFFERED YOU MAY COMBIN
   E BOTH    DICE OR USE THEM ONE AT A TIM
   E."
SZ 2660 ? "ALSO AT TIMES YOU WILL BE ABLE
    TO    MOVE YOUR OPPONENTS COUNTER BACK
    TO HIS/HER BASE LINE. WHEN YOU CAN ";
UP 2670 ? "NO  LONGER MOVE, ANY COUNTERS
   IN YOUR    OPPONENTS MIDDLE LINE ARE MO
   VED TO   SAFETY IN LINE THREE."
CK 2680 ? :POSITION 2,22:? "PRESS ANY KEY
    TO PLAY COUNTERACTION":POKE 82,2:POKE
    559,34
CX 2690 GET #1,KEY:CLR :GOTO 130
ER 2700 GRAPHICS 0:POKE 559,0:GOSUB 110
CY 2710 REM RESTORE 30170:FOR N=0 TO 99:R
   EAD X:POKE 1664+N,X:NEXT N
EF 2720 X=USR(1693):POKE 512,128:POKE 513
   ,6
JT 2730 DSTART=PEEK(560)+256*PEEK(561)
EY 2740 FOR N=DSTART+6 TO DSTART+28:POKE
   N,130:NEXT N:POKE DSTART+3,194:POKE 54
   286,192:POKE 710,0:POKE 709,10
NB 2750 PRINT CHR$(125)
UO 2760 GOTO 2580
OO 2770 DATA 72,138,72,174,156,6,189,176,
   6,141
IM 2780 DATA 10,212,141,24,208,189,200,6,
   141,23
IH 2790 DATA 208,238,156,6,104,170,104,64
   ,1,104
NA 2800 DATA 169,7,160,168,162,6,32,92,22
   8,96
CH 2810 DATA 169,1,141,156,6,76,98,228,0,
   164
XC 2820 DATA 164,164,164,0,52,52,52,52,52
   ,0
ND 2830 DATA 100,100,100,100,100,100,100,
   100,100,100
RU 2840 DATA 0,0,10,10,10,10,10,10,10,10
DA 2850 DATA 10,10,10,10,10,10,10,10,10,1
   0
HZ 2860 DATA 10,10,10,10,10,10,0,0,0,0
```

Supply Blaster

```
HI 1230 POP :GOTO V
QG 1500 FOR C=1 TO 9:READ A:SOUND 0,A,D,C
   +1:SOUND 1,A+2,D,C+1:READ B:FOR Q=1 TO
    B:NEXT Q:POKE V0,0
KM 1510 POKE V1,0:READ I:FOR F=0 TO I:NEX
   T F:NEXT C:RESTORE 1520:RETURN
NX 1520 DATA 243,20,2,217,20,2,193,20,2,2
   17,20,5,243,20,2,217,20,2,193,30,30,24
   3,45,20,243,120,20
```

It has been a few months since our regular column appeared and we've been progressing quite considerably. First, though, a mention of a few points raised at the Annual General Meeting (A.G.M.) which took place on November 15th. The attendance was, for want of a better description, 'tidy', but it was raining, wasn't it?

The retiring committee were all successful in their re-election and even managed to enlist an additional member and co-opt another two. The Officers of the club are:

Mike Reynold-Jones - Chairman (773 2849)
Mike Coleman - Vice Chairman (474 3946)
Chris Sola - Secretary (458 3865)
Dave Jones - Treasurer (444 2369)

and the other Committee members are:

Mike Wilkinson - Software Librarian
Wilf Coton
Les Bostock
Keith Mason
Mr Mulcahy

So if you have a problem, criticism, or just want to buy somebody a pint we will be available, (wearing our little yellow badges!).

Due to the total inefficiency of the membership records we have started from scratch this year with new membership cards and new membership numbers. We do not intend to admit anyone who does not show their new card at the door (unless they pay the visitors fee), so beware - you have been warned. And as the entrance fee has risen slightly, the Software Library is now open to all members, free of any additional charge - so let's see you taking software out.

Mike Coleman is running the Modem Sub-Group and is frantically working on the setting up of CBABBS (pronounced kebabs?) and that is the Central Birmingham Atari Bulletin Board Service, which should be up and running in the not-too-distant future, and all you Atari buffs nationwide will be able to contact B.U.G. via a modem (once we know what the phone number will be!)

Another sub-group recently set up is the Adventurers - but you should know all this - it's in our Newsletter.... Newsletter?.... yes, thanks to an absolutely amazing amount of work by one Chris Sola, last November saw the emergence of the all new B.U.G. Newsletter. We actually anounced some months earlier of our intentions to produce such a 'rag' and made a plea for items worthy of inclusion. Your response, as usual, was overwhelming, and Chris had to write the whole thing himself. We will not be mailing it to members so if you want one (and it really shouldn't be missed), you will have to come and collect it at one of the meetings. We hope that all future issues will be compiled entirely from members submissions, so if you have anything at all that you have written, from a one line sub-routine to a full 64K machine code programme we want it!

As well as the newsletter and CBABBS to look forward to this year, we are reviving the raffles, where you will (hopefully) be able to win worthwhile prizes for a token payment. The first of such raffles took place at the main December meeting, and just because a few committee members won on the party night doesn't mean to say it's rigged!! The main event at the first night, however, was provided by Andre Willey and Al Arnold, who brought along, and demonstrated, the N.T.S.C system on some rather expensive Sony equipment. So we were able to see and play games at the speed the Americans play them, some 15% faster than in the U.K.

And a final note to all those lucky people who, with grateful thanks to Santa, have become proud new owners of Atari hardware, and reside in the Birmingham area. Come and join us and discover what Atari really means. We are a user friendly (nice) users group and get pleasure in showing you how to get more pleasure from your machine. For a very small membership fee you get a free magazine, free newsletter and access to a software library. It is an ideal opportunity to share your ideas and problems, and make new friends with other Atari enthusiasts. For more details phone one of the committee officers or come along and visit us instead. We meet at 7.30pm every 1st, 3rd and 4th Thursday of each month at the Matador, opposite St. Martins church, in the Bullring. We hope to see a few new faces this year!

Mike Wilkinson

A message from ENGLISH SOFTWARE™ to all owners of

ATARI, COMMODORE 64, BBC B, ACORN ELECTRON and AMSTRAD Computers...



Software companies grow on trees ... at least that's the way it seems from the number of new companies springing up every week!

ENGLISH SOFTWARE was launched three years ago with a smashing little game for Atari Computers called **AIRSTRIKE 1,** which quickly became one of the most popular U.K. programmed games for the Atari.

Then, as now, Atari Computers were amongst the most advanced on the planet, but they were a **TRIFLE expensive!** But we knew that prices would come down, and that more people people would soon appreciate the great range of Atari software produced by **ENGLISH SOFTWARE.** But Atari owners **used** to be a funny lot, being heard to utter such gems as:

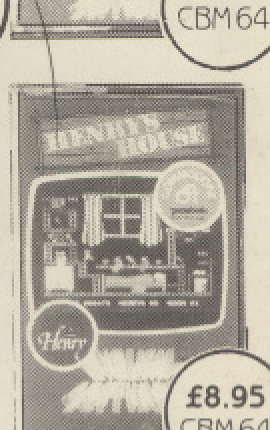
"It can't be any cop, if it costs less than £20"

Honestly, that's what they used to say! Anyway, in the face of this rather strange attitude, we went ahead and committed the ultimate sin:

ATARI GAMES AT £9.95!







We expected some slight resistance to these prices from Atari owners who only equated high quality with high prices, but we were wrong: Everybody thought the prices were great, **and** the games too!

We even produced the fantastic **ATARI CASSETTE ENHANCER** at £7.95, a superb utility program for **BASIC** programmers.

So now, for those of you who might have missed out on **all** our excellent Atari titles, we are releasing something very, very special:

ATARI SMASH HITS Volumes 1, 2 and 3 from **ENGLISH SOFTWARE.**





Five great games on one cassette for only £14.95, or on disk at £17.95!

Each cassette features our top-rated **JET-BOOT JACK** plus four other popular titles. So now you have no excuse to miss out on the best range of U.K. produced Atari 400/800/600XL/800XL software for 32K machines. If your dealer does not yet have them in stock, ask him to order them from his nearest Atari wholesaler. It will be the best Atari buy **YOU** will make all year!

We have also just released **COLOSSUS CHESS 3.0,** the best chess program available anywhere for Atari 400/800/600XL/800XL computers with 48K. Very powerful, with lots of excellent features.

For our good friends with other home computers, our programmers are busy producing original games for you as well. They are all illustrated on this page. **HENRY'S HOUSE** on the Commodore 64, and **JET-BOOT JACK** on the Electron are now available at selected branches of **W.H. SMITH.**

Selected English Software titles are available at: HARRODS and selected branches of: **LASKY'S, BOOTS, GRANADA COMPUTER STORES, CO-OP STORES, THE SILICA SHOP** Mail Order and Retail and all good software stores.

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